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Jas. & J. D. Franklin.

THE
HISTORY
OF
JAMAICA,
OR,
A GENERAL SURVEY OF THE ANTIENT
AND MODERN STATE
OF
THAT ISLAND:
WITH

Reflections on its Situation, Settlements, Inhabitants, Climate,
Products, Commerce, Laws, and Government.

IN THREE VOLUMES.

ILLUSTRATED WITH COPPER PLATES.

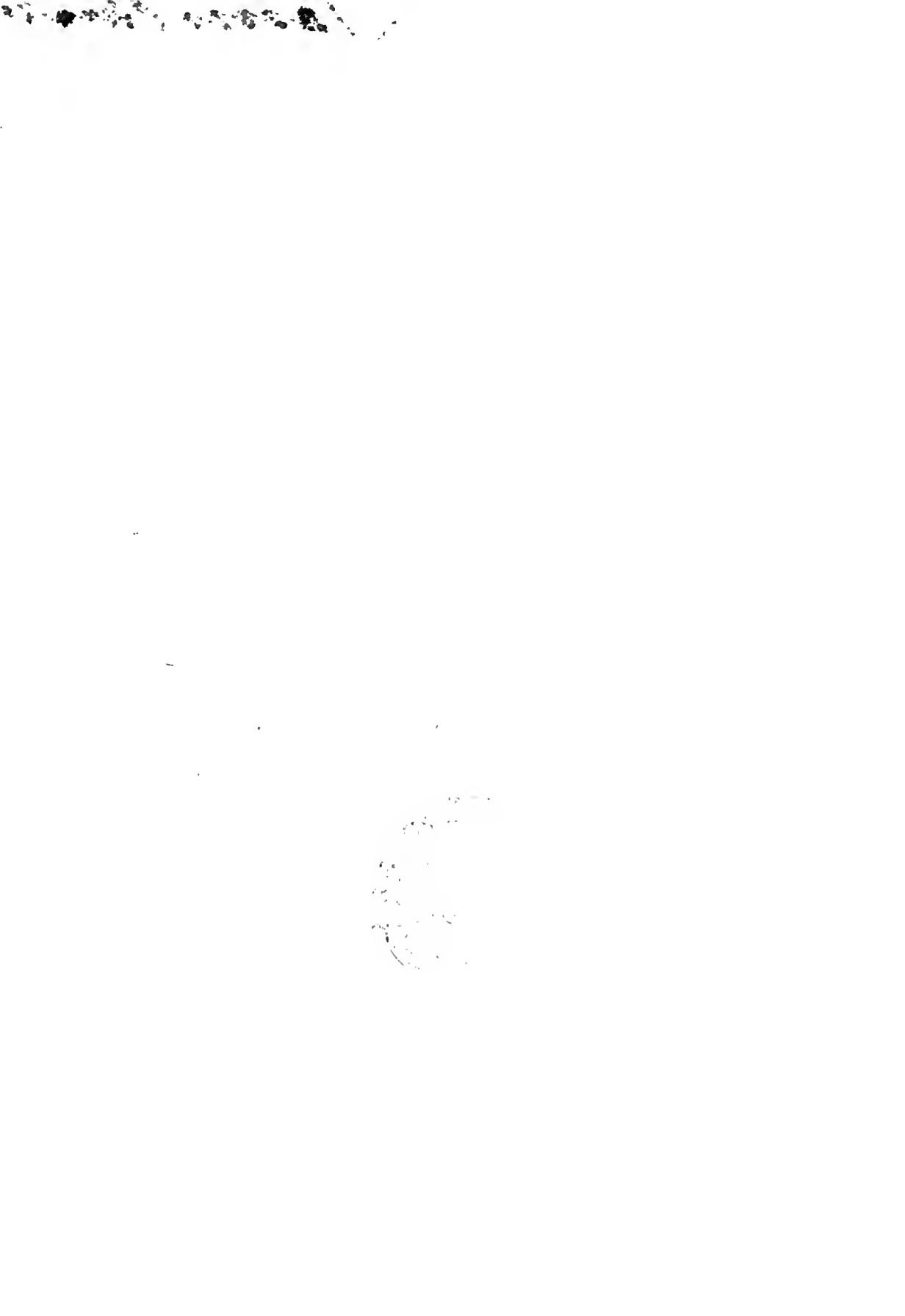


VOL. III.

— mea fuit semper hæc in re voluntas et sententia, quemvis ut hoc vellem de iis, qui
erint idonei suscipere, quam me; — me, ut mallem, quam neminem.

Cic. Orat. in CÆCIUM.

London:
PRINTED FOR T. LOWNDES, IN FLEET-STREET.
MDCCLXXIV.



P R E F A C E

T O

T H E T H I R D V O L U M E.

IT may be questioned, whether woods are to be considered any further detrimental to the air of their neighbourhood, than as they may obstruct the free passage of refreshing gales?

It is the opinion of an ingenious gentleman, who resided for many years in the West-Indies, that local unhealthiness in that part of the world has been most remarkable on spots newly cleared of their native woods; that for this reason, a residence there is generally unwholesome to the first settlers, though not always so to the first cultivators. The land in such places is covered to some depth with a mould, which has been gradually deposited and encreased by the trees, plants and vegetables, springing up, growing and rotting upon the surface for ages; so that an accession of soil has been gained every year, by the successive decay of these vegetable races. While it continues overshadowed with thick forests, equally impervious to the sun and winds, the soil lies in a kind of inactive state; but no sooner is it laid open to those influences, and the copious absorption of dews and showers, charged with volatile, putrefactive particles, than a ferment or intestine motion is excited; and vapoury steams begin to ascend in great abundance, which are prejudicial to human health. So, after these opened spots have lain for some space of time thus exposed, the fermentation gradually subsides, and, the materials which gave birth to these pernicious *effluvia* being exhausted, the air becomes amended, and the mortality ceases with the causes of it.

If this hypothesis be justly founded, the conclusion would follow, that all new settlements here should be cleared of their wood, and left bare for some time, before the settlers are suffered to dwell upon them. But experience does not positively confirm the fact. It is certain, however, that the woods themselves in this island are not unwholesome to those who inhabit in the midst of them, whether Whites or Blacks. Our Negroes, for the most part, are fond of living among trees and thickets. The truth perhaps may be, that they are too lazy to be at the trouble of felling them; this is the case in Africa, to a surprizing degree. The Indians on the American continent clear no greater extent of woodland, than what is barely sufficient for their annual corn harvest. Their erratic way of life, indeed, may be the chief reason why they do not cut down their forests; yet all these people esteem them not unfavourable to health. The Indian Aborigines of Jamaica cultivated only the savannahs. These fertile plains were affluent enough to supply them with more grain than they could possibly have consumed, if their number had been double what historians report of it.

I shall quote a respectable testimony hereafter, to shew that these congregations of trees are, in their growing state, far more friendly, than inimical in the alterations which they produce on our atmosphere. But in relation to the hypothesis beforementioned, let it be acknowledged, that the diseases which usually invade a new colony of people upon their first endeavours to plant themselves in a West Indian island, are of the putrid, nervous class. Heat and fermentation will generate a *factitious air* from vegetable substances, from fallen fruits and leaves, and the mingled salts of burnt wood, and calcined stones and earth; this species of air, when confined and accumulated, may be destructive to animal life; and when more diffused, the effects, though slower in their operation, may still be capable of affecting health in a degree, by its power of irritating and debilitating the nervous system. But it seems next to impossible that such *effluvia* can be concentrated on spots that are laid open to the sun and the winds; they must surely be soon exhaled or dissipated. Yet it is not denied, but that the vapours emitted from their surface, for some little time after the dense veil of wood is removed,

removed, may be injurious to a person constantly abiding there at all hours, and more especially during the night, when they may hover near the earth, for want of wind to disperse, or of heat to rarefy them. Such spots are likewise commonly first set with plantane suckers, which are of quick growth, extremely porous, and adapted to purify the air; insomuch that walks, or plantations of them, are remarkably healthful for residence.

This fixed air, which, *per se*, or uncompounded, is thought to be one of the greatest antiseptics in nature, and may be received into the lungs and bowels in a considerable quantity, not only without danger, but with eminent advantage in many purulent disorders; is, nevertheless, under some modes of composition and application, destructive to vitality, and affirmed to be the same as mephitic air. Philosophers, however, seem not to be as yet entirely agreed in this characteristic: for some alledge, that it is of a density or specific gravity much greater than that of common or *atmospheric air*; whereas the experiments made upon the air of a well, in which a lighted torch was instantly extinguished; on the air of the *Grotto de Cani* in Italy, and that of the cavern of *Pyrmont* [a], seem to indicate, that the mephitic does not differ from common air, either in gravity, humidity, or elasticity. Until further discoveries therefore shall decide this variety of opinion, the definition which Dr. *Dobson* has given us may safely be admitted.

“ *Fixed air* (says he) is the general term by which this subject is distinguished; and when it produces any *noxious* effects, either in consequence of the process by which it is procured, or the manner in which it is applied, it is then properly to be called *mephitic air* [b].”

Among the late advances towards an improved system of natural philosophy, there are none which reflect more honour on the human faculties, than those which have penetrated as it were into the invisible world, and (by the test of experiment, aided by rational inductions) brought forth to our perception some of those stupendous agents, whose subtlety had escaped our sight, and whose activity and power confounded and perplexed our judgement. Of these discoveries none are worthier our attention, than what tend to explain

[a] *Percival on the vapours of charcoal*, p. 100.

[b] P. 94.

and perfect the abstruser doctrines of pneumatic science, and direct their application to most useful purposes of human life.

Modern experiments have proved, that the mineral spirit, which imparts to *chalybeate-waters* all that pungent taste, vivacity, and volatile principle, on which their virtues chiefly depend, is no other than *fixed air*, which endues water with the power of dissolving not only calcareous earths, but even iron. Dr. *Priestly* has shewn an easy mode of extracting this air from grossly-powdered chalk, just covered with water, with a small addition of spirit of vitriol, commonly called the vitriolic acid. He has shewn it capable of operating medicinally in putrid distempers; and the experiments tried by Dr. *Percival*, and other able gentlemen of the faculty, have confirmed its amazing efficacy in several cases.

Such discoveries lead us on to a most interesting series of enquiry; for they successively present to our view some new testimony of the divine Wisdom, in the contrivance (and most beneficent purposes towards us, in the destination) of many wonderful phenomena peculiar to our system. In this pursuit, tempests, volcanos, lightning and earthquakes, begin to lose their horror; and while they appear remedial in those disorders to which the material constitution of our world is liable, we cannot but respect them as necessary and propitious, in the same manner as we regard those valuable specifics, which bring a recruit of sound health to our own distempered frames.

The incessant vitiation of our atmosphere; by the breath and putrefaction of animal, and the decay of vegetable bodies, by fires, and by volcanos, made it reasonable to conclude, that some provision there must be in nature for correcting this depraved state, and restoring the air to purity. Dr. *Hales* seemed to think no other agent necessary for this purpose than motion; that, fresh common air, impelled with velocity into that which was stagnant, confined, rancid, and pestilential, or into stinking water, sweetened them by dispersing and carrying off the volatile, offensive particles, with which they had been surcharged, and which lost their ill quality upon being diluted with, and absorbed into the vast tide of the atmosphere. He indeed supposed that the acid steams of vinegar and Sulphur, having a kind of elective attraction towards the alkaline *effluvia*,

effuvia, which render the air productive of malignant distempers, the gaol-fever and the plague, fermented with, and neutralized them.

He had also discovered, that the upper and nether waters of the ocean, by the unequal pressure of its surface, when formed into vast waves and surges, were blended together; which contributed to the keeping its lower waters sweet; and that in *rivers*, the surface being an inclined plane, the upper parts are continually descending and re-ascending, so as to form a perpetual intestine motion, which preserves their water from becoming putrid. But this ingenious philosopher was not so compleatly happy in his researches, as to conjecture the means which nature has provided for carrying out of the atmosphere those heterogeneous particles, that are incessantly loading it; and which, if retained and suffered to float in it, must soon infect the whole mass, and render it unfit for supporting animal life.

We owe to Dr. Priestly the suggestion of two grand resources for this salutary end; the first he assigns to the *vegetable* kingdom, the next to the *sea*, and other large collections of water; not however excluding Dr. Hales's principle of *ventilation* from a share in this important office.

He finds that the *effuvia* of vegetables are endued with the power of reviving common air, that has been vitiated, or fouled, by fire or respiration. That the aromatic vapours of plants, are not necessary participants in the office of restoring this purity; for that vegetables of an offensive smell, or those of no smell at all, but are of a *quick growth*, prove the very best for this purpose.

That plants thrive wonderfully well in putrid air, and in air that has been spoiled by animal respiration, in proportion to their vigour and the sound state of their leaves and branches. Thus the air, which is destructive to animal life, is salutary and nutrimental to vegetable; and what is poison to the former, is food for the latter.

In regard to the second resource, he tells us, that as well the air corrupted by the breath of animals, as that which is impaired by other putrid matter, is in *a good measure* sweetened by the septic particles infusing themselves into water; hence he deduces, that the sea,

sea, extensive lakes and rivers, which cover so large a portion of our globe, must be highly useful, by absorbing what is putrid, for the further purification of our atmosphere; thus bestowing what would be noxious to man and other animals, upon the formation of marine and other aquatic plants, or upon other purposes yet unknown.

“ Thus we are assured that no vegetable grows in vain, but every individual plant is serviceable to mankind; if not always distinguishable by some private virtue, yet making a part of the whole, which cleanses and purifies our atmosphere. In this the fragrant rose and deadly nightshade co-operate; nor is the herbage, nor the woods, that flourish in the most remote and unpeopled regions, unprofitable to us, nor we to them; considering how constantly the winds convey to them our vitiated air, for our relief and their nourishment; and if ever these salutary gales rise to storms and hurricanes, let us still trace and revere the ways of a beneficent Being, who not fortuitously, but with design; not in wrath, but in mercy, *thus shakes the waters and the air together*, to bury in the deep those putrid and pestilential effluvia, which the vegetables upon the face of the earth *had been insufficient to consume [c].*”

We may add to the list of restoratives, the aromatic odour of plants and the irrigation of flowers, whose refreshing effects on the atmosphere are so immediate and forcible, as to strike our senses in the most delightful manner.

These discoveries are noble, and open to us a new source of investigation into the wholsomeness or insalubrity of local situations in different countries, whether in the neighbourhood of large woods, capacious lakes, and great rivers; or where the inhabitants are destitute of some, or all of these purifiers. If such is the grand provision made for our globe at large, may we not indulge a thought, that it is dispensed in a more liberal portion to those regions, whose climate seems to require it? Dr. Hales computes, that respiration and perspiration both together, in England, are equal to the quantity of half the meat and drink which the people there daily take in; this he estimates at about thirty-nine ounces; but he rightly infers, that it must be far greater in *hot climates*; as in hot climates therefore the parents of putrefaction, and of a corrupted atmosphere, are much

[c] Sir John Pringle's Discourse, p. 26.

more numerous, active, and constant; so the means whereby their malignancy is obviated and decomposed, must be more powerful or more abundant than in Northern countries. We cannot then sufficiently admire and extol the very ample resources of this sort, which are observable in our island. In every part of it we find the remedies distributed with an unsparing hand. The atmosphere itself seems to be intimately blended with some species of elastic acid air, or vapour, which renders it invigorating to the animal spirits, which refrigerates heated liquors, abates the sensation of thirst, and keeps the blood in a cool and diluted state, so that ardent fevers and canine madness are almost unknown here. The rapidity of vegetation mocks the toil of the labourer; the earth abhors infecundity, and refuses to continue unclothed. Rivers stream around, descending from the very summits of high mountains, not in silent gentle streams, but dashing from rock to rock, and impetuously agitated in their course, in order the better to forward the process of nature. The lofty hills lift their thick forests to the clouds, and embrace the fresh gales; an infinite variety of succulent plants and trees spring up in almost every soil and situation, but most numerous in those which are low and swampy, where their services, and their multitude, may be most necessary.

The plantane, the palma *Christi*, trumpet-tree, water-vines, withes, and gourds; the arums, bambu, Scotch grass, lotus, and many others, seem to love these humble scites, and are excellently adapted to the medicinal intention, by the celerity and luxuriancy of their growth, the expansion of their leaves, and the large diameter of their tubes.

I need not speak of the innumerable aquatic plants, and the varieties of rank herbage, which carpet over the oozy beds of all our bays and harbours; of the gentler rivers and the lagoons; affording subsistence and shelter to the manati, the turtle, and a myriad of other creatures, which inhabit or graze upon them; whilst they are so many drains at the same time, to imbibe and draw from the atmosphere above, those foulnesses that are offensive to mankind. Such are then, in part, the wise and good means, which are prepared to guard against, or to disarm, the atmosphere of this country, of the hostile instruments which the warmth of climate may dispose it incessantly to generate; and which can only prove baneful to

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the inhabitants, when these enemies are so superabundant, as not to be entirely swept away, or absorbed. This inefficacy of their natural antidotes, it is probable, occurs but very seldom; for in all other branches of our system, we see either an exact *equilibrium*, or at least a struggle for equality, most regularly maintained. Yet it may possibly happen, that, in consequence of long drought, the rivers may become almost emptied of their waters; the reservoirs may fail; the leafy cloathing of the woods may be parched, arid, and juiceless, and animals be empoisoned in some degree by the septic fluid which involves them: tempestuous winds are then the customary and most useful auxiliaries; they fly to bestow the desired remedy; to replenish the earth with new treasures of water; to restore vegetation to the woods and herbage, purity to the air, and health to animals.

J A M A I C A.

V O L. III.

B O O K III.

C H A P. VII.

S E C T. I.

METEOROLOGICAL REMARKS on the Climate and Atmosphere
of JAMAICA.

WHEN the influence of the constitution of the air upon human bodies is duly considered, it will appear that this subject holds a very near connexion with what has just preceded. The study of diseases and symptoms, which derive their origin from this source, should undoubtedly claim attention from every physician, who wishes to trace the occult cause of a sudden popular sickness, and who, by due observance of the peculiar symptoms and maladies accompanying every change in the atmosphere, will be the better prepared and instructed to counteract their effects upon health.

I do not, however, take upon me to point out examples in Jamaica of this correspondence between the state of the air, and the symptoms of diseases; but only to publish some few observations, which I could not so well introduce in the former part of this work, where I gave a general description of the climate; and to exhibit a comparative view of it, with other places. For this purpose, I have principally selected Charles Town in South Carolina.

The greatest heat usually remarked in London, (I speak not of one or two singularly hot days) during the months of June, July, and August, is very little inferior to the general medium of heat observed at Spanish Town in Jamaica; yet this heat at Spanish Town is neither insalutary,

infalutary, nor inconvenient, so long as it is attended with moderately dry weather, and regular breezes. But the greatest heat observed in this town is many degrees inferior to the greatest heat at Charles Town. The whole range of thermometrical motion at Charles Town in one year was about 82 degrees, and at Spanish Town not more than 19.

At the former it has been remarked, that the atmosphere is 26 degrees warmer sometimes on the same day, between sun-rise and sun-set; and, on the contrary, that in the space of twenty-four hours, it became 46 degrees cooler than it had been on the preceding day. A transition so amazingly great and sudden may well be thought to affect the inhabitants in a very sensible manner, especially when it is considered, that such an alteration of weather, as precipitates the thermometer suddenly 10 or 12 degrees, makes it necessary to put on warmer cloathing.

On February 17, 1752, the thermometer at the Cape of Good Hope (about $34^{\circ} 30'$ S. lat.) was up at —————— 94

On the 22d of the same month, at —————— $97\frac{1}{4}$

At midnight, it sunk to —————— —————— 61

This sudden variation of $36\frac{1}{4}$ degrees was immediately followed by an epidemic distemper, which swept off great numbers of people.

It is not, therefore, a high degree of heat which renders a climate unwholesome, but it is the sudden change from great heat to (comparatively) great coolness, and *vice versa*. It is the happiness of the Jamaica atmosphere, to be exempt from these noxious variations; and it may, therefore, justly be presumed far healthier than those parts of the world which are liable to them, even though they may be situated many degrees nearer, either to the North or South Poles.

Yet, colonel Purry, the Swiss adventurer, in his memorial of 1724 lays it down for a certainty, that the latitude of South Carolina (33 to 35) is the happiest on the globe. “A latitude (says he) which, by the moderation of its heat, and temperature of its air, sheds fruitfulness upon the earth, and happiness on mankind.” Surely this gentleman must have taken up merely speculative ideas, or have yielded to the delusions of a lively imagination; or he would not thus have ventured to extol the moderation of heat, and temperature of air, where the heat is known from repeated experiments to raise the thermometer to upwards

upwards of one hundred, and where the air is subject to a variation of forty-six degrees in twenty-four hours. He, indeed, supposes "all other things equal;" and that there be no natural impediments, such as marshes, sandy deserts, and the like. By this prudent *syllogism*, he excludes at once the greater part of the province, and by far the richest; for that part, which furnishes so large a produce annually of indigo and rice, is the most unwholesome of any it is, and therefore not much calculated to promote the happiness of mankind, so far as respects health, however fruitful it may be.

During the growth of the rice in the months of July and August, the fevers, which attack strangers here, are very anomalous, not remitting nor intermitting soon, but partaking much of the nature of those distempers which are so fatal to the newly-arrived Europeans in West-India climates. The same may be said of Georgia and East Florida during those months. It is true, the great heats, observed at Charles Town, may perhaps be, in some measure, charged on its situation; which, I am told, is flat, low, and sandy, at the conflux of two rivers, and in the neighbourhood of extensive swamps. Further inland, one hundred miles from the coast, the climate is probably more temperate in summer; and some imagine, that, as the country becomes more opened and improved, the excessive cold, that prevails at certain times of the year, may gradually abate. But it is more reasonable to think, that the instability of temperature, the sudden starts from heat to cold, and cold to heat, will never cease; since they probably owe their origin to the shifting of the wind alternately from one point to another: when it comes from off the sea, it brings warm weather; but, when it veers to the North-west, it passes over that immense tract of continent stretching to the Arctic Circle, over vast lakes and high mountains capped with snow. To these eternal causes it owes its bleakness, which often produces such violent changes in the air of this province.

The heat at Kingston, in Jamaica, is somewhat greater than at Spanish Town. The air, about ten miles West from Spanish Town, in a small vale environed with hills, was found, at an average, six to seven degrees cooler than in that town.

When at Spanish Town, the thermometer was at — — } 89 } difference, 7 degrees.
 It was, in the vale, — — 82 }
 When at Spanish Town, — — 67 } ditto,
 It was, in the vale, — — 61 } ditto.

Hence we may estimate the difference of the air's temperature in the various districts of the island: so that, if the air of the towns is, at any time, found of a degree of heat inconvenient to health and ease, a person, who travels only a few miles inland, to the hilly or mountainous situations, is sure to meet with a temperate and refreshing air. About seventy degrees on the thermometer is a most delightful temperature; even to seventy-eight and eighty it is not inconvenient; and seventy-eight is about the *medium* state at Spanish Town during six months in the year.

The hottest time of the year, in Jamaica, is just before the setting-in of the autumnal rains, or the months of August and September.

The vernal seasons, if they come at all, happen indiscriminately in April or May, but more regularly in May. But they fail, at least, four out of seven years; and this disappointment is amply recompensed by the vast quantity of rain that falls about the latter end of August, and in course of the two succeeding months. When the vernal season fails, I have remarked, that a double fall of rain, or double season, has happened; the first setting-in at the latter end of August and the beginning of September; then discontinuing till towards the close of October, when it has re-commenced, and held on, more or less, till the 10th or 15th of November.

The *medium* heat of Spanish Town, in the cooler part of the year, is, as I have mentioned, about seventy-eight; and, in the hotter months, about eighty-five. The highest in the whole year has rarely exceeded ninety-two. I remember to have seen it above this but once, which was in August, 1767; when, during some days of very unusual heat, which preceded a heavy rain, it rose one afternoon to ninety-three; but other thermometers made it *four* degrees less in every register. I shall hereafter resume this subject; but, at present, it is necessary I should mention some particulars

particulars relative to the trade and land-winds, which have a great influence on the thermometer in this country.

S E C T. II.

TRADE and LAND-WINDS.

DOCTOR HALLEY, I believe, was the first who communicated a rational explication of the causes of the trade, or as it is called here, the sea-breeze, which blows all the year between the Tropics. Dr. Franklin struck out lately a very ingenious theory, somewhat different from the former; and has endeavoured to make it account for the periodical North-Westers, which predominate in the higher latitudes of North-America. It would employ too much room to transcribe what these learned gentlemen have published. I shall therefore confine myself to such remarks as occurred to me at Jamaica, not without hope that they may serve to throw some further light on a subject, which has not only been thought extremely curious and interesting, but to be ranked among those dispensations which are the evident result of Infinite Wisdom and Goodness.

A chain of hills running N. and S., of which there are many in this island, will, by the interruption they give to the free and direct course of the sea-breeze, render all places near, lying to the Westward of them, hotter than other places which are ventilated without such obstructions. Nevertheless, the regular breeze, if it blows not very violent, is liable to be frequently deflected from the shore by the land-wind; which latter is often suddenly produced after the falling of heavy showers inland, and upon the mountains; the cool vapour rushes from thence towards the hot, dry air, which hovers over the savannahs and coasts adjacent. The great action, or rarefaction, caused by the sun in this climate, regularly attracts a train of vapour, or dense air, after it, and by that means gives birth to the diurnal breeze, which is light and gentle at first in the morning, increases as the sun ascends higher above the horizon, and declining in the same gradual manner, for the most part, as the sun descends in the afternoon.

The

The land-wind is more or less predominant over a moderate breeze, according to the greater or less quantity of rain that has fallen inland; so that sometimes the land-wind is partial, extending over a particular tract of country; whilst other places, situate to the Eastward and Westward more remote from the rain, are not at all affected by it, but have their sea-breeze uninterrupted.

Rain falls heaviest in the mountains; the clouds tend to them; the atmosphere of the woods probably attracts in some degree; the rains have been known to fail, in some parts, near a range of high hills, after the woods were cut down: besides, the vapours are there, as it were, entangled; bandied about by contrary floods of air; reverberated in a variety of directions by the various configuration of high lands, vallies, gullies, and other channels, as it happens among the streets, squares, alleys, high and low buildings of a large city. The land-wind, following rain, proceeds from that quarter where the rain has fallen heaviest, and seems to be nothing more than a dense, moist vapour, rushing towards the heated, dry, and rarefied atmosphere in the lowlands, and near the coast.

In Spain, North-America, and some other countries, which have hot summers, the cold particles, brought by Northerly winds into mountainous districts, frequently rush down upon the inhabitants in the lowlands during the summer heats, and condense the air below to such a degree, that they are suddenly benumbed. This would probably be the case in Jamaica also, if it contained any mountains of such altitude as to be cloathed with perpetual snow on their summits, like the Cordilleras of South-America. The sea-breeze, though it slackens towards evening, and then discontinues on shore, yet continues blowing all night at about ten or twelve leagues distance from the coast. The reason of this may be, that, in the day-time, the land being greatly heated, and the air which successively covers it much rarefied, the breeze naturally rushes to restore an equilibrium, and holds on its current, till the sun ceases to act upon the land. The frigorific particles, then descending from a great height upon the mountains, proceed on towards the coast, weakening the impulse of the sea-wind (which is warmer and more rarefied) as it goes; and thence it blows out to sea, to

the distance above-mentioned, growing fainter and fainter, till it is quite spent; and here we fall in again with the regular trade, which, at a distance from large islands, or the continent, ventilates incessantly night and day. This is agreeable to the reports of seamen bound for the island; and it is observed, that the smaller islands, as Barbadoes, St. Kitt's, and the rest, have their sea-breeze by night, as well as in the day-time.

Conformable to this opinion is what may be likewise remarked in Jamaica; where, during very hot, dry weather, particularly in the month of June, the land is so heated, and consequently the atmosphere which covers it, that the breeze continues to blow during the greater part of the night; the air on the mountains not acquiring sufficient density to check or interrupt it.

A wind from the mountains is often observed on the South side, especially in the months of May and October; which by many is mistaken for the land-wind, but it is not properly to be so called.

Heavy, black clouds appear to rise in the South-west or South towards the setting-in of the evening, with frequent coruscations of distant lightning in the same quarter. The mercury in the barometer subsides from one inch to one and a half; the moon at full, or just past it. A Westerly wind sometimes springs up about eight o'clock in the evening, generally much stronger than the usual land-wind; it continues blowing about two hours, or more; then dies away; and, the wind appearing to veer round to the Southward of the East, very heavy squalls come on with rain.

But these Westers are often very gentle; though, if heavy rains have recently fallen in the quarter of the island from whence they seem to blow, they are found proportionably stronger.

These deviations from the usual, regular current of air may probably happen by reverberation from the high mountains which divide the island, the South from the North side.

On the 9th of May, after a continuance of sultry weather for the space of three weeks, the thermometer, generally at eighty-five, rose to eighty-eight about seven in the evening; a smart wind from the North-west, unusual at this time of year, came off the mountains; about three in the morning, a very violent rain began, attended with a brisk sea-breeze from the South-east, which lasted

lasted some hours; after day-light, I observed very thick, watery clouds failing from the point last-mentioned.

I before remarked, that towards sun-set the sea-breeze commonly begins to slacken its force in the South-side lowlands, and gradually dies away. After it ceases to be felt by the inhabitants of those parts next-adjacent to the coast, they receive in its room a gentle gale from the mountains Northwards. Yet sometimes the clouds are seen still pursuing their course from the South-east. In fact, at these times the sea-breeze still retains its force in the higher parts of the atmosphere, and blows upon the elevated summits of the mountainous districts for a considerable time afterwards; from whence it is reflected towards the South coast: so that the mountaineers have it in a steady current with them the whole night at such times; whilst the inhabitants of the lower savannahs have what seems to them a land-wind.

At a house situated on a hill at the North side, the sea-breeze frequently remained with us all night, when the people on the coast had a land-wind.

The land-wind, therefore, proceeds occasionally from the sea-breeze, reflected down from the mountainous ridges. This effect is produced by the particular figure of the island; which I can compare to nothing apter than an accumulation of several high roofs contiguous to each other, set upon a plain surface.

I had a further confirmation of this singularity in May, 1761; at which time I was at a gentleman's house on the South side, which stands on a little insulated stony hill, rising out of a savannah that extends to the sea. Behind it, at the distance of about a quarter of a mile, is a high mountain, communicating with still higher ranges, of a vast extent. He informed me, that, the night before my arrival, a violent gust of wind from the Southward, about midnight, set directly against the front of his house; and shortly afterwards another, almost as furious, attacked the back-part from the Northward; so that he was not without apprehensions, that his house, and every thing in it, would have been blown down the hill. It is reasonable to conjecture, that this sudden and impetuous gust, which assaulted the front of his house with such vehemence, meeting presently afterwards with resistance from

the mountain, was repelled with almost equal force, and reacted upon the back-part.

The sea-breeze divides, at the Eastern end of the island, into two streams; so that, on what is called the North side, the inhabitants have their breeze apparently from the North-east; and those on the South side, from the South-east. This may, in some measure, account for what would otherwise appear very singular, viz. the blowing of the wind sometimes from the mountains towards every part of the sea-coast all round the island, when the mountains have the sea-breeze, and the lowlands none, and which comes with the greatest *impetus* upon those parts which are backed by the highest mountains. But the great disparity on the state of the atmosphere at night, on the mountains and over the lowlands, is doubtless the real cause of the true land-wind.

The lowland atmosphere is, in the course of the day, rarefied to a prodigious degree by the solar action, and reflection of the earth's surface. The atmosphere of the mountains, on the other hand, is, from the extent of their woods, frequency of rains, and their elevation, comparatively denser. Their dense, moist vapours rush down to every part of the coast and the savannahs in a continued current, which will always be more or less violent, in proportion as the lowland atmosphere has been more or less rarefied; and this stream descends incessantly through the night, endeavouring, as it were, to restore an equilibrium. But a positive equilibrium, perhaps, can never happen, the sun not continuing long enough under the horizon, and the heavy cold air of the upper region descending in succession to the mountain tops, and supplying fresh aid to the current by its condensing power. However, a great change is effected, during the night, on the state and temperature of the air below, which is so well refrigerated by the land-wind, that, immediately preceding the dawn of day, it is often extremely cool. When the sun has risen above the horizon some degrees, and begun again to rarefy the air of the flat country, the current of wind becomes fresher, and augmented in its strength; and so continues, until the regular trade sets in upon the coast, and suspends it entirely till the return of evening. This may be termed the true land-wind, to distinguish it from those irregular currents

of air which happen whenever the higher lands receive the first impression of the sea winds, or retain them longer; the clouds at such times being elevated to considerable height, and moving in the upper region with great velocity. These blasts act with violence on the mountains, whilst all is calm and serene in the low-land, until the resistance of such lofty masses rebuffs the current down upon the inferior situations; so that, whilst the inhabitants here feel the impression of it from the Westward, or North-West, they see with surprize a scud flying over their heads in a contrary direction; but generally a little time clears up all doubts; a suspension follows of the land current, or a temporary calm, succeeded by a South-East or Southerly gale, and torrents of rain.

The figure in the annexed plate represents the island extending longitudinally, East to West, intersected by chains of high mountains. From the feet of these to the South-side coast, and the like in most parts of the North-side, the ground gently slopes by a small declivity to the sea. The sea-breeze, whilst it continues in the East and South-East points, blowing upon the East end, is divided in its current, passing in curved lines along the two opposite coasts of North and South. When the sun approaches the Northern Tropic, the sea-breeze declines more Southerly; and then follows the sun's track, only varying some few points in the course of the day. This is particularly observable in June.

When the sun rises North-east, the morning breeze sets from the same quarter; but, as the former continues its progress, the latter will apparently diverge to the Southward, till the sun sets in the North-west, at which time the breeze seems to come from the South-east. So, when the sun returns again to visit the Tropic of Capricorn, the further he declines towards South-west, the more will the breeze recede towards the North-east and Northerly points. When he sets in the South-west quarter, the dense air from the North gains upon the usual trade-wind, and grows more vigorous, necessarily hastening towards those regions where the atmosphere is in a state of greatest rarefaction. The Norths at this time set-in early in the evening, and continue till late in the morning; and the sea-breeze is proportionably diminished in strength and continuance. When therefore the sun rises in the South-east,

South-east, the current of air in the morning will proceed from the North-west, till he is advanced to considerable elevation; after which, the wind will be found to agitate a little from the South-east, till he sets; at which time, the North will spring up again from the North-east, and continue all night.

These observations do not hold regularly in all parts of the island; for, in some, the natural position of the intersecting mountains, or some other local cause, may produce a variation in appearance. But, in general, they sufficiently mark the changes which are incident to these currents of air in Jamaica; the wind most commonly falling into the sun's track in the fore-part of the day, and facing its disk in the after-part.

In the month of April, after a continuance for some time of dry weather, with violent sea-breezes, the thermometer generally at eighty-seven and eighty-eight in Spanish Town, all day, and till late in the evening (a proof of the great heat in the atmosphere), a sudden rain fell, which held, more or less, during five successive days. The thermometer sunk thereupon to eighty-four and eighty; but, the rainy weather breaking up, and the sea-breeze returning again with the same violence as before, the thermometer rose, in one day, to its primitive station of eighty-eight. Hence it would seem, that the sea-breeze does not actually render the air cooler, but only communicates a sensation of coolness, by agitating the atmosphere which envelopes a human body; for, on the days when it blew with greatest force, the thermometer rose highest; and, when it blew late in the evening, the thermometer sunk very little; but the nights were hot, and disagreeable.

A real, as well as sensible, coolness proceeds here from the interposition of clouds, which render the air of every place that is screened by them more temperate. In the month of June, some heavy clouds, passing to the Westward in the afternoon, threw a very extensive shade over the part of the country where I then happened to be, and caused so immediate an alteration in the state of the air, that the thermometer fell from ninety-two to eighty-seven, or five degrees; so great a difference is here, occasioned by a clear or clouded atmosphere. And this phenomenon assists to shew, why the mountains, and midland parts of this island, exclusive

clusive of their greater elevation, must ever be the most temperate; for the flat lands near the coast are seldom shaded in this manner, but lie exposed whole days to the uninterrupted torrefaction of the sun. The clouds, being driven on upon the Eastern extremity of the island by the sea-breeze, are accumulated over the mountains, or middle region, and there detained, sometimes by the reverberation of wind from different angles of high ridges; at other times by the conflicting currents occasioned by vallies, gullies, and other in-draughts, till they are either condensed into rain, or at length forced onwards along the range to the Westward by the strenuous impulse of the breeze. The lands therefore, which lie under this track, have few days without a shower, and none without shade; whilst the lowlands remain parched, for want of these seasonable irrigations; and, being rarely overshadowed by vapours, the sun's impression is more intensely felt there. The like remark occurs in the places situated under the Equator, where the air is invariably most cool when the sun is vertical; at which time their periodical rains come on, and the thick skreen of vapours, intercepting the solar rays, brings the atmosphere below into a very pleasant temperature. The uneasy sensations, felt in Jamaica about the time of the periodical seasons, when the days are calm, and only a few showers fall now and then, as a prelude to the heavy fall, may be thus accounted for.

It has been experimentally found, that sixty-three degrees of heat, in a damp, hot atmosphere, is much more incommodious to remain in for a time, than seventy degrees of heat in a dry, hot sun-shine; the great irksomeness arising from a damp heat being occasioned not only by obstructing the respiration, but by relaxing the surface of the body: and the like difference is observed between a damp, or a dry, cold air; the former, with a less degree of cold, incommoding much more, than the latter, with a greater degree. The reason of which is, that dry air attracts moisture strongly, and, by carrying off the frouzy vapours which exhale incessantly from the body, promotes a freer perspiration, which refreshes and exhilarates; when inspired into the lungs, it dilates their small vesicles more than a damp air will, and causes a freer circulation of the blood. In a stagnation of the air, these steams remain ho-

vering about the body, and, fermenting, excite it to a corrupt or morbid state. Hence it is, that the calm, stagnant air of a country, with moisture and heat, is bad and unwholesome [y]. Hence too we remark, that Spanish Town is, *caeteris paribus*, perfectly healthful in dry weather, although the thermometer be extremely high; and ever most sickly, when the air is moist and close, though the thermometer be many degrees lower.

Dry air is very electrical. Thus a glass tube, excited to electricity by friction, will not only forcibly attract little drops of water to it, but will also draw a small stream of falling water, of one tenth of an inch diameter, from a perpendicular into a curve. Is it not accountable, upon this principle,

1st, That the land-rains, on the South side of Jamaica, come off the mountains with more facility and violence after a series of dry weather in the lowlands?

2dly, That, after the lowlands have been thoroughly saturated with water, showers but seldom come from the mountains; but the clouds, which have discharged plentifully on the highlands, are frequently seen to hold up on quitting them, and traverse to sea-ward, over the champaigne country, without letting fall any more rain?

3dly, That sometimes, after dry weather in the mountains, *curved* streams of thin rain are seen here and there descending upon the highest ridges, either of very short continuance, or else appearing to increase in bulk and extent, until a heavy shower seems collected over such parts?

As air attracts water, so a stream of water carries a body of air along with it: the air, to use the phrase of Dr. Hales, "rides upon it." In all the river-courses of Jamaica, there is a sensible current of air. Rain never comes without some degree of wind; and we observe the showers, which fall in Jamaica, almost invariably following the very meanders of the larger rivers, unless the wind accompanying them is so violent as to force them into a different track.

When the wind is South and South-west on the South side, it is often North-easterly on the North side, attended with very heavy rains.

[y] Pringle.

When

When the weather has been perfectly fair at Spanish Town (although heavy rains fell for some days preceding), I have known an incessant rain, of thirty hours duration, at the North side, in the month of October.

In the month of March were very hard rains at Spanish Town; and, at the same time, great complaints of dry weather at the North side.

The Rio Cobre was flooded in the same month, and several times ran over the bridge; and the Vale of Luidas was deluged with rain; whilst the North side parishes, St. Mary and St. Anne, continued excessively dry.

From an opposition of currents in the air may proceed the frequent calms and gentle sea-breezes observed on the South side in August and September. Hence also we may account for the fresher land-winds, which now begin to gain the ascendency, till the sea-wind settles in the Northerly points.

In June and July, the trade-wind is generally violent, and blows late in the evening, commonly hardest at the South side, and fixed at South-east. At such time, the sun is near the Northern Tropic; but, when he declines towards the Southern, a cool wind then begins from the contrary side of the island, and blows towards the South side. The land-wind blows later in the morning, comes on earlier in the evening; and the sea-breeze is faint and irregular. This is usually first perceived about the latter end of August.

These remarks, founded on the experience of several years, will contribute perhaps to explain the cause of that difference in climate subsisting betwixt the North and South sides of the island; by which means the canes arrive so many months earlier at maturity in the latter than the former; and likewise of those singular deviations which distinguish this island from the British Windward Isles, which, being comparatively low and small, and nearer the Equinoctial, are perflated with the regular trade, and have no land-winds.

It is no small pre-eminence to enjoy this variation of temperature in the different districts of the island; by which the annual crop is, in general, rendered more even and uniform, since, if it fails in one part, it is found to make amends in the others. A choice of

situations, in so large and diversified a range, is, moreover, a desirable advantage to purchasers and settlers, who may accommodate themselves easily in that point. Nor is it a mean consideration, that valetudinarians, and persons recovering from illness, may either derive a re-establishment of health from some of the noblest mineral waters on the globe, or from the pure and bracing air of the mountains; remedies, which, though so obvious, are too little valued here; whilst many, in seeking a cure, by desperately posting into the frozen climes of North-America, or Europe, frequently perish in the attempt; or, if they get through the voyage, often undergo a most severe and hazardous trial of their constitution, by encountering the rigours of a long winter.

S E C T. III.

GENERAL REMARKS, connected with the foregoing Subject-matter.

1. THE sun's course seems to govern the direction of the trade-wind, or breeze.
2. The falling of rain here produces a positive coolness in the temperament of the air. The thermometer, after a shower, falls sometimes six to eight degrees.
3. This cool state will continue, if the sun remains obscured with a high mist, or thick vapour. This generally may be noted immediately after the seasons.
4. When the weather is exceedingly hot, but continually dry, Spanish Town is perfectly healthful.
5. There is seldom a variation of more than six to nine degrees on the thermometer in one day at Spanish Town, observed from six in the morning to six in the afternoon.
6. The barometrical variations are greatest in April, May, and October.
7. After squalls and rain all day in the lowlands from the Southward, if rain has fallen heavily in the mountains, the wind is changed at Spanish Town, towards evening, to a North, or else a strong land-wind.
8. A long-continued drought, of some months, almost always breaks up with a smart thunder, attended with heavy rains, in this island;

island; but at the Windward Islands, more usually with gales of wind.

9. The first appearance or dawn of day is an arch of light, which gradually dilates. From the first *radius* of light, to sun-rise, is about an hour and an half.

10. The *crepusculum* before the moon's rising is about half an hour.

11. In *January*, upon a suspension of the North wind for about a week, the sea-breeze blew with great violence, setting in at ten or eleven in the forenoon, and continuing till late in the evening. When the sea-breeze blows at this time of the year, it sets in at least two or three hours later than in the hot months, the sun being far to the Southward, and not rarefying the atmosphere near the Northern Tropic sufficiently to excite the current so early as in those months.

12. February 2. A heavy rain from the South-west this day, was succeeded on the day following by a strong *North*. The wind in shifting round from South to North, probably occasioned this fall of rain.

13. Showers in this month, although they cause the grass of the South side, low-land pastures, to sprout a little, yet being generally followed by a North, the impression of this drying wind checks it again immediately.

14. During this month, the land-wind seems unusually brisk in the morning, being strengthened probably by a gentle North.

15. Feb. The Norths and sea-breezes are observed frequently to blow alternately; and upon a change from North-east to South-east, drizzling rains or small showers commonly fall.

16. The variation of the thermometer was greater in this month than in any other, amounting in some years to eighteen degrees. Whence it may be concluded, that warmer cloathing is now required, to guard the body against any ill effect from such changes.

17. On moving the thermometer the 17th of this month at six in the morning, from the apartment where it usually hung, into another, less frequented and more exposed to the air, it sunk four degrees.

18. On taking off a mahogany cap which covered the bulb, the spirit sunk instantly five degrees. By letting it remain all night

uncovered, I found it in the morning six degrees lower than usual when the cap was kept on.

19. In March, at night, just before the setting in of a North (which continued three days and nights incessantly with great strength), the air was exceedingly close and sultry; but this wind sunk the thermometer eight degrees.

20. April 1. After sultry weather, and change of wind from N. North-east to South-east, were frequent heavy showers, but little or no thunder from the beginning of November to this time.

21. April and May, the North-east wind is observed to shift to the Southward of the East, and sometimes Westerly; but *vice versa* in September, October, and November, generally causing heavy rains with these variations.

22. September. Generally sultry with light breezes and calms alternately. But the thermometer not so high in this month as in August.

23. Sept. 19. Excessively hot and calm at Spanish Town, and no breeze; but at old Harbour-bay, about fourteen miles Southwest there was a sea-breeze, so violent as to drive some of the ships from their moorings.

24. Sept. 21. After a still morning, a hard rain fell at Spanish Town, which broke up about sunset with some thunder. The wind, whilst the rain lasted, seemed to be at no fixed point, but driving the vapours about in different directions.

25. Oct. 4. In the evening the roar of the sea at about ten miles distance, heard very plainly at Spanish Town. In the night, and during some days afterwards, squalls, wind, and rain.

26. Oct. 15. About four in the afternoon, for two or three days past, a light breeze observed to spring up from the South-west, scarcely perceptible but by the clouds floating from that quarter. At intervals a gentle land-wind felt from the North, and a faint breeze from the South-east. From these opposite currents, a calm probably ensued, the clouds appearing to stagnate for some time over Liguanea Mountains, and then descended in a very copious rain.

27. Heavy rains for several days, in course of this month, rendered the air sixteen degrees cooler than it was before.

28. Nov. 11. A North, at first setting in this day, was observed to affect most persons with a sensation of unusual coolness; but actually sunk the thermometer only two degrees. A very strong North in twenty-four hours sinks five to eight or more degrees lower than before.

29. Nov. 21. The sun set at twenty-seven minutes past five. The largest western planets appeared at five minutes past six P. M. The redness of the Western hemisphere disappeared about a quarter past six P. M.

S E C T. IV.

Effects on Health, concomitant to the Changes of Weather in this Island.

A continuance of weather unusually hot and dry, is in general not unhealthy. The disorders which sometimes attend it, are fevers tending to inflammation, ophthalmies, pleurisies and peripneumonies, and convulsive coughs.

This state of the air is favourable to inoculation.

A sudden change from very dry to very wet, checks the perspirable matter, and throwing it on the bowels, produces diarrhoeas, dysenteries, coughs, apoplexies, paralytic complaints, worm fevers, and favours the contagion of small-pox, chicken-pox, and measles.

Wet and cool. Quotidian, or continued remitting fevers, tumours and swellings; a tendency of the humours towards the head.

Warm and moist. Diarrhoeas and dysenteries more malignant. Putrid and nervous fevers. Relaxes the solids, and causes an afflux of humours to the bowels.

Cool and dry. Braces the solids, and disposes to spasmodic disorders, as the belly-ache, tetanus, &c. and turns the humours upon the superior parts, the heart and breast, producing catarrhs, quinzies, coughs, pleurisies, and other disorders of the inflammatory kind.

But a dry, settled air, either cool or temperate, is, *cæteris paribus*, the most healthful.

A moist chilly atmosphere at the setting-in of the Norths, produces agues and intermittents, sometimes remittents, on the South side.

In proportion as the thermometer rises very high, and settles for any considerable time at such a height, fevers, and other inflammatory disorders, may be expected to be chiefly prevalent.

In 1764, dry hot weather continued on the South side from January to June. Multitudes of cattle perished at the pens in the neighbourhood, and dropped in the roads for want of fodder. It is impossible to conceive the annoyance which travelers suffered from the stench of their carcasses lying unburied, till they were devoured by the crows and dogs. A very malignant sort of small-pox succeeded in Spanish Town, which swept off numbers of the Negroes. The thermometer in June was mostly at 87 and 88. The disorder raged with greatest fatality after the falling of a few slight showers.

The coming in of dry warm weather after moist and warm, causes a free perspiration without inflaming the body; diverts the flux of humours from the bowels to the skin, and abates diarrhoeas, dysenteries, &c.

An unusually dry cool air braces the fibres here too suddenly, and disposes to spasms.

Long-continued dryness and heat, having the like effect on the fibres, and rendering them too rigid, produce inflammatory symptoms in the blood, from slight accidental causes, as being over-heated with exercise or hard drinking, and suddenly taking cold, getting wet, or in any other way stopping perspiration, and so imprisoning those humours which ought to have been eliminated by the pores.

Negroes are in general the first seized with those distempers which become epidemic, except they are of the putrid class. On the setting-in of hard rains after a long drought, they should be restrained as much as possible from indulging in fruits and roots too liberally; these aliments, at such times, having absorbed the water very plentifully, are crude and unwholesome. Such fugacious substances, together with indifferent cloathing, and exposure to the inclemencies of weather, stop perspiration, translate the humours upon their bowels, and there generate violent colics, and sometimes mortal diarrhoeas.

After a series of hot, dry, and calm weather, eight days of continued rain succeeded in May 1761. Spanish Town grew more sickly than ever I knew it, either before or since. From that period to August there were buried twenty-nine white inhabitants, of whom fifteen were soldiers. Their disorder had all the appearance of being the true yellow fever, and was supposed to have been communicated from some ship in Kingston harbour. The ships in the merchants' service have no lazaretto or hospital on shore for their sick men; though so necessary a building might be, with great conveniency and cheapness, erected for them on the Palisados, a dry, airy, healthful spot, where they might be supplied with all proper accommodations, either from the ships, or the town of Kingston, by a short water-carriage.

From October 1768 to May 1770 was the longest and severest drought ever remembered in this island, which particularly affected the South side district; for in some of the North side parishes, as St. James and St. Mary, and at the two extremities, St. Thomas and Portland in the East, Westmoreland and Hanover in the West, there were moderate showers. In Liguanea, most of the canes were destroyed by it. The like calamity befel Vere and Clarendon. Many cotton-trees (a tree of the largest size) were killed; which is the more extraordinary, as their tap-root descends a prodigious depth below the surface. The grass on the lowland pastures and meadows was entirely burnt up. Wells and rivers lost their water. Numberless cattle were of course starved to death, and many Negroes perished as well by famine as thirst. Such of the inhabitants as, from necessity or caution, removed with their cattle and Negroes into the mountains, preserved their lives. Nature has provided in their woods a variety of fodder, consisting of a sort of wild oat, certain withs, and the leaves of some trees, which endure the driest weather, and afford a hearty, wholesome nutriment. The few scattered showers, which fell in these parts, prevented a total destruction of the plantain walks and vegetable roots.

In May 1770, exceeding heavy rains set in, which soon restored every thing to its primitive verdure; they continued also with some severity in the following months. So copious a glut of moisture, immediately coming after so long a reign of heat and dryness, was necessarily introductory of sickness, which chiefly invaded the towns; and putrid distempers were most epidemic. Many persons were apprehensive that an earthquake or hurricane would be another natural consequence. On the 3d of September, about eight in the morning, a very smart shock was felt, which continued near the space of one minute.

minute. It was most violent at Kingston, where it threw down several kitchen-chimnies, damaged some walls, and alarmed the inhabitants so much, that many jumped out of the windows and piazzas one story high, by which a few were lamed, but no lives lost. Two or three old buildings in the country were shaken to pieces. Near the sea-coast the agitation was observed to be greatest. In the Marine Hospital at Port Royal were several bathing-tubs, which appeared to be strongly affected by the shock ; the water undulated to and fro in them with so much violence as to dash over the sides. It was preceded, as usual, with sultry weather and a rumbling noise. This earthquake, happily so little injurious to Jamaica, originated at Hispaniola, where it was accompanied with eruptions, and did infinite mischief. The hardiness of the sugar-cane was sufficiently evinced during the dry weather, it being among the last of the vegetable kind that perished. One good consequence of the drought was, that some persons who had removed into the woodlands to enjoy a moister soil, and procure sustenance for their cattle, discovered such advantages of situation in those parts, as induced them to establish inland settlements. The value of the grass farms at Pedro's was also very conspicuous, for they proved the salvation of many hundred head of cattle brought thither from the lowlands, which shewed the great utility of having settlements in the mid district of the island. The distempers which followed on the change of weather were mostly diarrhoeas among the Negroes ; coughs, measles, and remittent and putrid fevers.

Violent earthquakes, accompanied with vapourous eruptions, have always produced noxious effects upon the health of those who have been near the place of their breaking-out ; yet I cannot think that they are the proximate cause of any *endemic*, or peculiarly malignant disorder. For if we suppose that some quantity of mephitic air is discharged at every opening of the earth, this would speedily be corrected by the atmospherical air. If putrid *effluvia* are emitted by turning up the filthy mud of lagoons and other impure sediments in shallow water on the coast, it must then depend on the state of the air succeeding the shock, how far these noisome steams may dispose to a malignant sickness ; if the air continue perfectly serene, it is probable any fever contracted at that time would become malignant ; but earthquakes are commonly, if not regularly, followed with wind or rain, or both, which effectually purge the air of these foulnesses.

After the earthquake which happened here in 1692, a great sickness raged, which few or no families escaped. The like consequence befel the people of Hispaniola, after the shock and eruption abovementioned. Expelled from their ruined habitations, exposed to the inclemencies of

of the air by day and night, their terror excited by the calamity, their anxiety for the loss of goods, relations, or friends, destroyed, constant dejection of spirits, and want of necessary conveniences for health, it is no wonder that, under the concurrence of these circumstances, they should contract sickness, that the symptoms should be aggravated to a degree of contagion, and thus spread almost universally through a country.

S E C T. V.

E A R T H Q U A K E S.

A series of dry weather for five, six, or seven months, in this island, generally terminates, either in an earthquake, or a gulf of wind and rain, attended with or without thunder.

Earthquakes usually happen immediately after the first fall of heavy rain, succeeding a drought.

The weather is always extremely sultry, close, and still, just before an earthquake, or before strong breezes, violent Norths, or heavy rains.

Earthquakes seldom, if ever, happen in windy weather.

They are succeeded here with squalls of wind and rain, sometimes accompanied with thunder (but more usually without) and sometimes with a *brutum fulmen*. When frequent small shocks happen, there is less of thunder and lightning than at any other times; and it has been remarked, that when thunder and lightning happen after earthquakes, the shocks from that time either discontinue, or become fainter and fainter.

All shocks are horizontal; none have ever been known to act in a perpendicular direction.

Hence it has been supposed, on very probable grounds, that the air is more often the vehicle of the shock than has generally been imagined: and that the electric fluid, which pervades all nature; and, when put in motion, is equal to the most violent effects ever known to happen from earthquakes, is a principal agent in causing them. But other principles may also lend their aid. In its subterraneous progress it may enkindle inflammable matter, and generate a rarefied vapour of immense power [n]. The vapour seems to endeavour by every means to get vent; and, passing by substances of solidity sufficient to divert it, seeks an easier course through sandy and other light *strata*, which make less resistance; and at length bursts forth into the atmosphere.

Hence buildings, erected on a rocky foundation, are subject to be less injured by them than those which are built on other soils; and more particularly those which stand on a loose sandy texture, contiguous to the sea.

[n] Water turned into vapour is said to occupy 14,000 times its former space.

No earthquake perhaps ever happens without an explosion or eruption somewhere or other ; but, where such explosion happens, its effects are always the most destructive ; and the injury decreases in proportion to the squares of the distances from that part.

At what distance from the eruption the effects are so far weakened, as to cause no damage to buildings, has not yet been decided. The pulsation, or stroke, we know, may be communicated through a line of some thousand miles in length ; thus the great earthquake at Lisbon, in 1755, caused some unusual agitation of the water to be observed at Barbadoes. Ships, at 180 miles distance at sea, felt the shock in the same manner as if they had struck upon a rock ; but I am apt to think, that the effects are rarely fatal to strong buildings at the distance of 50 miles, unless they lie on the sea-coast, or arm of the sea, whose water freely conducts the shock.

Rivers are likewise conductors, and the buildings situated on their banks are more severely affected than others which are remote from them.

On the 9th of November, 1761, the day cloudy and sultry, thermometer, at ten o'clock A. M. 75 deg. the Southern horizon looked extremely black, and a prodigious swell tumbled into Kingston harbour, which raised the water $2\frac{1}{2}$ feet above the wharfs. On this day happened an earthquake and storm at Cartagena, distant about 435 miles, which did some damage to the town, and choaked up the entrance of their port with sand. The next day the wind at Jamaica was S. E. very squally, attended with hard rain and thunder. On the 11th, a brisk North set in.

In 1766 (June), when a violent earthquake happened at St. Jago in Cuba (distance about 95 miles), where it occasioned vast mischief, the undulation was felt the same night at Jamaica, tending from North to South, and so strong, that it stopped the pendulum of every clock in the island, but threw down no building. It was felt here between 11 and 12 at night. The evening was remarkably serene, the sky perfectly clear, and the air unusually close. Some persons, who were abroad, observed several streams of light, or ignited vapour to the Northwards, darting up to a considerable height, immediately before they perceived the tremor. A similar phænomenon was observed just before the great earthquake in Sicily (1693). Some country people, who were travelling, saw a great flame, or light, so bright, that they took it for real fire ; and, whilst they were gazing at it, the shock began. I remember likewise, that, whilst I was sitting at table after dinner one day, the air uncommonly sultry, the house seemed to be struck on a sudden as with an electrical shock ; and, at the same instant I heard a rumbling noise,

and felt my chair lifted up on one side ; I knew it was the effect of an earthquake ; and, looking through a window which faced the sea, I observed two streams of fire, which seemed to descend from some black clouds, at a great distance, into the water.

The shock felt in June, 1770, which broke out somewhere about Port au Prince, in Hispaniola, and about 230 miles distance from the Eastern district of Jamaica, was more violent than the former one which happened at Cuba. It is said to have thrown down all the buildings in that part of Hispaniola, and even to have swallowed up a mountain. Yet its efforts were so much spent, before they reached Jamaica, that only a few old chimneys, slightly built, and two or three crazy walls in the country, were thrown down by the shock in this island. In the following year, 1771, several smart shocks were felt here, and some buildings damaged, but no persons hurt.

Many small shocks probably happen in these islands, which escape notice ; for even the greater ones have not been perceived by persons who were traveling on horseback, or otherwise in motion.

They are doubtless, as well as hurricanes, destined to answer some wise, and perhaps salutary purpose in the œconomy of nature, although it must be owned, that they are a sort of medicines extremely rough in their operations [o].

But if their eruption discharges noxious *effluvia* into the air, it seems a providential remedy that showers of rain almost invariably follow any considerable shock, whose sprinkling brings a supply of fresh air, and corrects the unwholesome state of what has been vitiated. Thus it was observed, that a fall of rain greatly checked the ravages of the last plague in London ; and, for this reason, streams of water are scattered down into wells and shafts, for purifying their malignant vapours.

The shocks I felt in the course of eight years were six in number, and at the following times of the year.

3d of March,	17th of September,
12th of May,	26th of October,
23d of June,	15th of November.

There were others, noted by other persons, which I did not feel, or was not sensible of ; and some were said to be felt in January and February. But I think there seems to be no certain or stated time of the year for them to happen. That which befel Sicily, before spoken of, began the 19th of January. These fits therefore seem not reducible, till we are better acquainted with their origin, to any distinct periods ; but may happen from a particular combination of materials in the bowels of the earth, or a casual disposition of the weather and elements necessary for their generation.

[o] In the litany used at Jamaica, the word *civilisatio* is always added to the list of what are commonly called natural evils.

S E C T. VI.

H U R R I C A N E S.

The limits of the trade-wind are fixed to about the 30th degree of N. latitude; and these storms are seldom known to proceed beyond 18 or 20 N. They usually happen after, or just about the sun's return from the Tropic of Cancer; at which time the places nearest to the North of the Equinoctial are most subject to them. The sun, by its long stay at the Northern Tropic, heats all those parts that are immediately under its zenith to a very unusual degree; and hence currents of denser air may rush from the climates further North; which, coming in opposition to the regular trade, may produce variable winds and calms, followed by terrible gusts, till the proper state of the air is restored, and the trade is settled again in the East. All hurricanes come on either on the day of the full, the change, or quarter, of the moon. They begin from the North, veer back to the W. N. W. Westward, and S. S. W.; and, when got round to the S. E. the foul weather breaks up.

The inhabitants within their track are seldom taken unprepared, as there are several prognostics of their approach.

First, Extraordinary continuance of dry, hot weather, for several months.

Secondly, On their near approach, a turbulent appearance of the sky. The sun unusually red. The air perfectly calm. The highest mountains clear of fogs, and seen very distinctly. The stars at night with large burs round them. The sky towards the North West looking very black and foul. The sea smelling unusually strong, and rolling on the coast, and into harbours, with a great swell. On the full of the moon, a bur is seen round her orb, and sometimes a halo round the sun. These signs should be carefully watched, in August, September, and October.

Thirdly, Immediately before the storm begins, the wind commonly blows hard for an hour or two from the West; which never happening but on such an occasion, the tempest may with great certainty be expected to follow. From the West it suddenly chops to the North-East; then backening to the Westward again, veers about the compass, until it settles into the regular trade.

This island has been less affected with them than the Windward Caribbee islands; where they occur frequently, but do not often pass beyond Porto Rico.

The last, which happened on the 31st of August, 1772, was particularly destructive to them. This dreadful tempest, which seems not to have gone further South than 15 degrees N. lat. fell on all the Caribbee

Caribbee islands, in their turn, from that degree of latitude, and passing along by Porto Rico, Hispaniola, and the South side of Cuba, swept across the mouth of the Gulph of Mexico, quite into the Bay of Honduras, in a course of near 700 leagues, *or upwards*; for its place of origination is unknown.

Jamaica, being fortunately screened by the islands of Hispaniola and Cuba, which intercepted the main stream of wind, escaped without any material damage; the inhabitants thought the weather a little tempestuous, but were not alarmed at it; the wind was chiefly felt on the North side of the island; but, in most other parts, they had deluges of rain, which flooded the rivers to an incredible height, tore up several bridges, and drowned a good many cattle, sheep, and some Negroes.

A gentleman, who was at this time passenger in a small vessel bound through the Gulph of Florida, for North America, gave the following account.

They had just left the West end of the island, on the 31st of August, but could then perceive no appearance of approaching bad weather. The wind indeed got round to the *Westward*, and continued in that quarter, blowing moderately, for three days. They supposed themselves off the Cuba shore, in the afternoon of September the 3d, and were then quite becalmed. On a sudden the wind came on violently from the North, and blew very hard till midnight. About half an hour afterwards it ceased at once, and a perfect calm ensued, which lasted only a few minutes; when a contrary wind as suddenly began from the South; and, by its opposition to the range of the waves, raised a most terrible sea. At one o'clock this wind increased to a tremendous height, and continued, without the smallest abatement of its fury, till two: from this time it abated but very little till noon, when it hauled round to the Eastward, and there settled into a moderate gale, which brought them clear weather again. The progress of this storm from the Northward, round by the West and South, to the usual quarter of the trade-wind, agrees with, and corroborates, what has been before-mentioned in general, allowing for some small variations which may happen in places differently situated.

The third of September has been a remarkable day in the annals of England. It was the anniversary of the two memorable victories gained by Cromwell, at Dunbar, 1650; and Worcester, 1651; he died on the third of September, 1758; and the same day produced one of the most violent tempests ever remembered there, and probably only to be equalled by this, which happened in 1772, in the West Indies.

Hurricanes.

Hurricanes are always accompanied with great rains, and a cool state of the air; however destructive therefore they may be in some respects, they fertilize the earth, purge the atmosphere from malignant vapours, and bring with them a healthful season.

The following is a list of those which have been noted at our principal islands:

1670 — Barbadoes.	1720 — Barbadoes.
1674 — Ditto.	1722 — Jamaica.
1675 — Ditto.	1733 — Caribbees in general.
1691 — Antigua.	1744 — Jamaica.
1700 — Barbadoes.	1764 — Martinico, and Carthagena, and partially at some of our Caribbee isles.
1702 — Ditto.	
1707 — Caribbee isles in general	
1712 — Jamaica.	1772 — Most of the Caribbee isles.

The mechanism of these storms does not yet seem to be satisfactorily explained; for, if they were the result of stated effects caused on the Tropical atmosphere, by the sun's annual progress to, continuance near, and recess from, the Northern Tropic, we should expect to see these gales more regular and uniform, or, at least, that they would happen at stated periods. But, on the contrary, we find them variable, and seemingly much dependent on the casual state of the atmosphere, in particular regions; insomuch, that in some years they have been perfectly local, and fallen on some one island, without disturbing the rest. Nor is the cause explained why, when they happen, the wind should always incline round by the Western points. But, in all cases, a very extensive and unusual rarefaction of the atmosphere in some one place, may perhaps be necessary to produce them; and I have observed, that, in our autumnal seasons, which fall out not long after the Equinox, we have generally in Jamaica a kind of hurricane in miniature; for, after the sea breeze has failed and slackened, calms ensue; then the season comes on generally with a moderate gale at first from the S. W. and before the weather breaks up, it varies to several points of the compass, till it is fixed in the N. E. The analogy between these little conflicts and those greater ones, which constitute a true hurricane, is very remarkable.

I cannot here omit the prescription which the learned Doctor Hales has given us for abating the force of these storms. For this purpose he advises the firing a good number of sky-rockets, or hoisting paper kites, one tied to another, with a rocket, or pistol, fastened at the tail of the uppermost, to be let off by means of a match, on attaining its greatest elevation. This project is founded on the supposition that

as the air, for some days preceding these storms, is hot, sultry, and loaded with inflammable sulphurous vapours, these vapours may be thus let off prematurely before too great a quantity of them is collected for a natural explosion, and so the *pabulum* of the storm be consumed. This scheme puts me in mind of the impudent quack at Port Royal, who, after the earthquake, in 1692, advertized his “*Specific pills to prevent earthquakes.*” The experiment, however, would afford a very pleasing sight, if it was to be tried from the tops of the Blue Mountains; but the greatest difficulty might be, how to make the kites ascend in that calm and breathless atmosphere, which is observed for several days preceding a storm; this, I must confess, is an unlucky circumstance, and not easy to be got over. Let us, notwithstanding, do the justice to Dr. Hales to acknowledge, that, in starting such a proposal, he begs it may not be treated as *ridiculous*, but merely as an experiment *worthy* to be tried, considering the *great importance* of the object; if, therefore, no answerable success could probably be hoped from it, we must at least applaud the benevolence of the ingenious author.

At the beginning of a hurricane, and whilst it rages, there are incessant coruscations of a *brutum fulmen*, not succeeded by any thunder. These seem to be rather of the phosphorus kind, than the matter of real lightning, and appear to generate wind and vapour, accelerating and augmenting, instead of opposing, the *momentum* of the gale.

But if we admit the doctor’s theory, that the atmosphere is replenished with sulphureous vapours, it is wonderful that they should remain unkindled; or, if exploded, that no thunder should follow; on the other hand, must not such vapours, if existing in the air, and hovering over any country, be quickly put in motion, and dispersed by the irresistible fury of these violent winds, from the instant they begin to blow there. The inhabitants of such a country know, that the storm is over, so soon as they hear thunder. And whenever vehement gusts of wind set in, with all the symptoms of an approaching tempest, they are relieved by this sound from every apprehension. The explosion of ignited matter, therefore, seems to be the *coup de grace* of hurricanes. And so far, perhaps, the doctor’s theory may be plausible; that, if, upon the immediate appulse of the storm, a sufficient large body of vapour could be fired in a certain region of the air, and in the same manner, and with the same effect, that the electric fluid causes in darting from one cloud to another, the resistance, formed by these undulations in the higher atmosphere repeatedly made for some time, might possibly repel the current of wind in a degree, and diminish its *momentum*;

tum; but it seems not very probable that sky-rockets and pistols would answer the like purpose.

S E C T. VII.

L I G H T N I N G A N D T H U N D E R.

The lightning here, if it is not too nigh, forms one of the most magnificent objects in nature, particularly at night, when it moves in a thousand different figures, and exhibits an appearance far superior, in splendor and beauty, to the finest artificial fire-works.

It is sometimes seen just glimmering on the horizon; at other times, darting along a distant huge cloud in variegated directions, strait or serpentine; or playing round its edge in circles or meanders, beautiful and curious, glittering in streams or jets of the purest, liveliest golden colour.

I have remarked three apparently different sorts here; I say apparently because the medium of air, through which it was observed, might cause a difference of the perceptible colour.

1. The red which follows rain.
2. The white, happening indiscriminately with or without rain; and which is sure to do mischief, when precipitated before rain.
3. *Brutum fulmen*, which flashes with great vivacity, but without noise, and is usually attended with much rain, and wind.

The sound of thunder, when it happens in some parts of the mountains, being reverberated from hill to hill, and rock to rock, occasions a continual echo and roar; and during the rainy seasons, this species of music has been known to last several hours, without any pause or interval.

When the clouds are high in the atmosphere, the thunder is a deep hollow roll through the whole extent of vapours, as if moving horizontally. When the clouds hang lower, the thunder-claps are much louder, more smart and compact, resembling the near explosion of a cannon. I have remarked that the white lightning, when darting in a small, thready, stream, has caused a silvery, or metallic sound, very different from any other. The deep, hoarse, rolling thunder is chiefly heard at the first onset, and during the continuance of the rainy seasons. The thunder showers, which are the harbingers of those seasons, or that happen upon the breaking up of dry weather, or come with a violent flurry of rain, are produced from large detached clouds, and the claps are then smart and loud. Every clap or explosion from the clouds here, seems to generate a thin vapour, expanded like a sheet, in a direction against the wind; and this expansion continues with more and more density till the sun is wholly veiled, and the sea-breeze lulled into a calm, by repeated claps. The dense

dense air, caused by the rain thus shaken down, forms a new wind from the land, which seems to drive the clouds from off the mountain, to sea; and when these vapours are entirely disengaged from these high lands, the thunder generally ceases; they pass silently over the level country, where there is nothing to obstruct their course. Sometimes, when their electricity appears as it were exhausted, the sea-breeze returns again, checks their passage, and impels them back to the mountains, where they either hold on their course peaceably, or, meeting with new collections of other clouds, repeat the scene over again, though with less turbulence than before. The expansion, or mist, remarked to increase after every flash, may probably be owing to a *vacuum* caused by the lightning, into which the denser particles immediately rush; or an extreme rarefaction of watery vapour, caused by the same agent, which necessarily rises into a higher station in the atmosphere, for it always appears elevated far above those clouds, out of which it has been formed. The atmosphere of these thunder clouds is perhaps colder and more dense than the particles which constitute the sea-breeze; and therefore resists and overcomes their motion to a certain distance. Hence, probably, the reason why, after these clouds have passed entirely away, if the sun should break out again, with vigour enough to heat the air, over that tract of country where the showers had fallen two or three hours before, the breeze gradually revives and ventilates it, but with a feebler current.

Thunder and lightning often happen at the setting-in of the North's in November, and at their breaking up in April or May; they seem necessary instruments to bring about those periodical changes of the stated winds, which, but for their operation, would not be effected without a hurricane, or a fit of turbulent weather.

Thunder-squalls are common to the months of June, July, August, September, particularly in the mountains.

At the town of Kingston there is seldom any; the vast mountains behind it draw off the clouds on that side, and being open towards the sea, on the other, the vapours from land pass off at a great height above the town, free of interruption.

At Spanish Town there is more of it, the Heathshire-hills to the Southward giving some impediment to the clouds; so that when they are checked at all by a sea-breeze, in their passage to the ocean, they are either accumulated, or drove back against the land wind; and in either case, are subject to be broken and diffused in showers.

It is curious to remark here the constant seeming attraction between the mountains and the rain. Heavy showers are frequently seen to traverse the ridges, avoiding a nearer way across the plains, and to

creep on to the utmost extremity of some cape or headland, till they reach the sea.

According to Mr. Franklin's theory, a sea-cloud, charged with the electric matter, passing over a land-cloud, which is non-electrised, parts with its fire by the attraction of this inferior cloud, and transfers so much into it, till they are both brought to a par.

This doctrine may help us in accounting for the frequency of thunder and lightning in some districts of the mountains. Lightning happens oftenest in the midland range, and Western extremity of the island. The land-wind, when it is fresh at night, blows off a large collection of vapours, consisting partly of exhalations after rain fallen during the day, of fogs, or of clouds drained of their electric matter, by repeated discharges.

These in their passage over the mountains are often retarded by the atmosphere, perhaps, of lofty woods, or currents of reverberated air, and do not sail many leagues out at sea till morning; on the setting-in of the trade or breeze, they are forced back again upon the land, and the sea-clouds that follow, being raised much higher, inject their electric charges copiously into these non-electrised land-vapours, as soon as they come within the sphere of their action. In general these land-clouds hang low [ρ], rarely floating above two-thirds the height of the Blue Mountain ridges, and are lowest during heavy rains; at which time, there seems to be a concatenation of vapour from the uppermost cloud downwards, resembling a bundle of wool suspended in the air, the lowest flocks appearing broken and divelicated near the earth. After the land has been parched with continued heat and drought, these lower fleeces hang so little a distance above the surface, as to feel some effect from its reflected warmth, and dissolve into rain. The first sprinkling is seen to re-ascend from the ground, like vapour from a hot iron plunged into water. These *effluvia*, being of the nature of land clouds and non-electrised, sometimes do not ascend far before the electric fluid is imparted to them from above; whence it follows, that, if any building, tree, or animal, be within its sphere of attraction, some fatal accident may happen.

The lightning which does mischief usually seems to dart in a continued stream, the velocity of motion giving it that appearance, and falls on some object elevated above the earth's surface, not always preferring the highest; but selecting that conductor which has something of iron, or pointed materials to attract it.

[ρ] Occasioned by the great rarefaction of the atmosphere, which favours their descent through a medium specifically lighter than themselves.

A house, having a pinnacle or sharpened point on the top of the roof, will therefore be more obnoxious to its stroke, than another which has no such attractor.

I have known a building not exceeding 14 feet in height, having the hip-rafters united in a perpendicular spike, or post of timber sharpened at top (as pigeon and mill-houses are commonly constructed here) struck with lightning, when a dwelling-house, distant only twelve yards from it, and at least 30 feet in height, but having no point of attraction upon it, escaped untouched.

Hence it is, that cocoa-nut, cabbage, and other trees of the palm kind, are oftener struck than any other. In general, the small twigs of trees, or perhaps their atmosphere, attract lightning. The lofty and massive cotton trees are frequently destroyed by it, or mutilated in their principal branches, which is visible to travelers, in many parts of the mountains.

From these observations may be inferred, the expediency of building low houses in the country parts of this island, raised on a foundation not exceeding three or four feet, with a roof of moderate pitch, and taking care not to fix any wooden or metallic spikes *by way of ornament* at top, unless a conductor or rod be erected for its security; and except in very low and watery situations, where buildings of two stories are proper for health.

Trees planted too near, such as the cocoa and cabbage, are natural conductors, and may endanger it, by being rent in pieces; but, at a moderate distance, they will, by their superior elevation and attracting points, catch the electric fluid in thunder gusts approaching very near, and transinit it to the earth without injury to such buildings.

Houses thus constructed would likewise be more secure against the effects of a hurricane or earthquake.

Travelers, overtaken by a thunder gust, should prefer a drenching, or a shelter under a rock, rather than under trees on the road side, as such trees are often destroyed.

In all buildings here, care should be taken to have neither iron bars nor bolts, but rather fastenings of timber; by which precaution, accidents might be much prevented. Most of the houses, that I can remember to have been struck here by lightning, having attracted it by iron bars across the doors, or some other iron work about them.

Before the setting-in of the periodical rains, it is usual to see flashings all round the horizon. Whenever lightning appears in the evening in that quarter from whence the wind has blown all day, the ensuing day is generally rainy. Large flashings over the S. E. summit of the Blue Mountains, indicate rain to the flat country lying to the Westward of them.

I have frequently in the night-time, in a clear serene air, observed small orbs of fire kindled in the higher region, and descend very rapidly to the earth. These are commonly called *shooting-stars*; they are probably sulphureous, nitrous, or oleaginous particles, which, meeting with other *effluvia* at a certain elevation in the atmosphere adapted to enkindle them, suddenly shew themselves in flame, and burn downwards, till the whole train of inflammable matter, which reaches to the earth, or near it, is consumed; for, sometimes, they appear extinguished before they reach it. The quantity of this inflammable matter is seldom so large as to produce any noise. It is not an absurd conjecture, perhaps, that such collections may often contribute greatly towards that havoc which accompanies lightning. When the atmosphere of a cloud, impregnated with the electric fluid, happens to come in contact with such phlogistic particles collected in the air, they may join their force together, and precipitate towards the earth, in the same direction as the meteor would have taken singly. I think it is not to be doubted, but that such meteors are as often enkindled in the day-time, as in the night, though, by reason of the sun's stronger light, they may not be visible.

As they are mostly seen in a calm and warm state of the air, and in dry weather, so they are regarded as presages of drought.

The most remarkable meteor observed here, was seen on the 22d of January, 1770, about seven in the evening. The weather preceding was hot and dry, and accompanied with some very slight earthquakes. This meteor came from the W. S. W., increased in its apparent bulk as it rose, and, when it arrived at the meridian, emitted so strong a light, that, for more than the space of a minute, the smallest print or writing might easily be read. There were darted from the main orb, six or seven smaller portions, resembling very large brilliant stars, which presently disappeared. After this, the orb assumed the appearance of a large ball of fire, losing its bulk and splendor gradually, and, changing its former direction to that of E. S. E., it descended towards the horizon with a long dusky reddish *coma*, somewhat interrupted across, until it entirely vanished.

The whole time of its duration, from the time it was first seen, was about five minutes. [Plate B.]

a—Its first appearance.

b—Its course, and seeming increase of bulk as it arose.

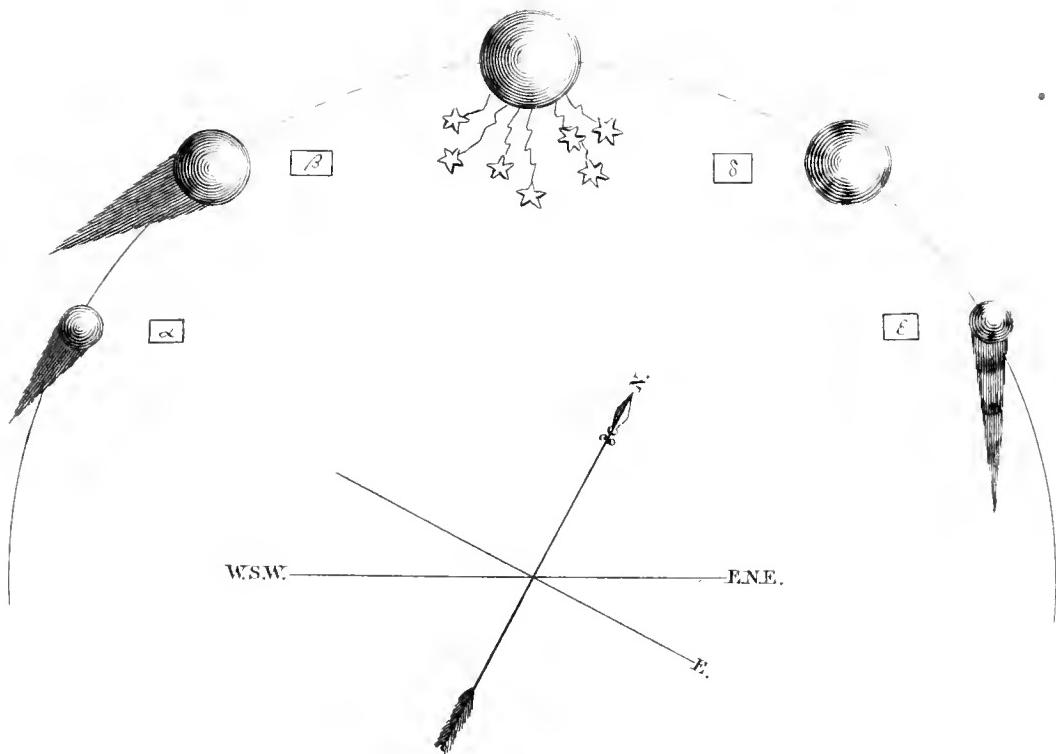
c—Its greatest elevation and division into minuter portions. At this period it was most resplendent, and appeared much larger than in any other part of the arch, and without any tail, as it also did in the next station.

d—Its

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[3]



- δ—Its appearance, as it changed its direction downwards, and to the E. S. E. It now began to lose its lustre, and assumed the complexion of a red-hot coal of fire, having some parts brighter than others, as it were in concentric circles.
 ε—Its phasis, as it descended with a faintly-luminous, reddish tail, transversely interrupted with dark or dusky portions, before the whole entirely disappeared.

About 14 or 15 minutes after it ceased to be visible, there was heard a very full and loud report, like the explosion of a powder magazine, which gradually declined into a sound resembling distant thunder, or the distant rumbling of several coaches over stones. It was seen with the same appearances at Luidas, Port-Morant, and many other parts of the island.

Whether the explosion, that was heard, happened on its attaining the meridian, or at the time of its vanishing, is uncertain; but, in either case, the distance must have been almost incredibly great. Sound is supposed to move 1000 feet in a second of time. In the first case, it must have been distant from the observers about 214 miles; and, in the second case, about 18 $\frac{1}{4}$, allowing the interval at the lowest computation, or 14 minutes; consequently, in the former case, it must have been very far indeed above our atmosphere, at the height commonly supposed of 45 to 50 miles: and its velocity must have been immense; since, taking the length of the island for the chord of the arch apparently described (equal to about 150 miles), it traversed over it in so short a space of time as that of 5, or, at most, 6 minutes. If, therefore, it could admit of mensuration, the series would turn out amazingly great.

Whether it portended a change of weather seems not to be very certain; but in May following, the heaviest rains fell after the long drought, that had been known for the time of year. But to return:

The means whereby the mischief of lightning is warded off from men's habitations, is one of the greatest and most useful discoveries that the present age has afforded.

Experiments in electricity shewed, that the dangerous effects of this æthereal fire might be obviated, by attracting it upon iron rods erected to the height of some feet above the roofs of buildings, and carried on to the earth below, to the depth of two or three feet in a direction, diverging from the foundation; or into a well, or piece of water.

The ingenious Mr. Franklin, whom I have often quoted, was the first who introduced this invention into practice. He erected several of these apparatus on different buildings in Philadelphia; experience taught him how to improve them still further; and at length that ele-

ment, which used to be so tremendous when left to its own ungoverned rage, submitted to his controul, and suffered itself to be conducted with as much facility along his rods, as water through a pipe. He established the invention upon this corollary; viz. That iron being the substance in nature which seems most readily to attract the electric fluid, or matter of lightning, therefore an electric or thunder-cloud, passing over an iron conductor properly disposed, will be disarmed of its ammunition. At such a time the rod will vibrate, and upon the appulse of a finger emit sparks, with a noise, or small explosion.

Professor Richmann at Petersburgh was destroyed by an apparatus, in which the conductor was carried no lower than the table in his study. Whilst he was attentively observing it during the passage of a thunder-cloud over the house, a ball of fire shot from the conductor to his forehead, killed him instantly, and damaged the room. The reason assigned for this accident is, that his body was at that very time the nearest to the earth, and therefore stood in place of a conductor; and it is therefore justly to be concluded, that if the iron chain, instead of stopping at the table, had been continued down quite into the earth, this misfortune would not have befallen him. But I do not know if we are to call it unfortunate; it was only the sacrifice of one life, perhaps, to effect the preservation of many; and it suggested a hint for the more secure method of fixing conductors on houses, for the better protection of their inhabitants.

When this fluid is possessed of a metallic conductor, it is found to go in quest of none other; and is never known to deviate, if such a conductor is of sufficient diameter or substance to carry off the whole that may happen to fall upon it at any one time. If such an apparatus, of due solidity, was fixed on lofty church spires, it would probably rescue them from a fate that is now become too common. At present, the tall rod, on which their vanes revolve, serves as a ready attractor to draw the lightning down upon them, and conducts it as far as it beds into the stone or wood-work. But, in consequence of an obstinate and infatuated adherence to old customs, we hear of infinite devastations committed by lightning on some or other of these venerable fabrics every year, in England, and other countries; stones are displaced and whirled away to a great distance, lead melted, bells thrown down, walls split, and timbers fired or shivered into atoms. A practice equally wrong still prevails among maritime people, of fixing iron spindles on the top gallant masts of ships, which by their power of attraction have often produced the most fatal consequences, as well to such vessels, as to the persons on board. A few years ago, two vessels sailed from a port on the North side of Jamaica, bound to North America,

rica, and laden chiefly with rum; on board one of which, a gentleman embarked passenger, with his wife and child. They had not left the port many hours before a thunder gust came on; the lightning, attracted by the iron spindles, fell on the ship in which the gentleman and his family were, and set fire to the rum (probably caused by the iron hoops on the puncheons), which blew up in a moment, and not a soul on board escaped; for the accident was so sudden, that the vessel in company could give no assistance; and so fatal, that it did not appear any one individual survived the explosion.

Some vessels belonging to North America are furnished with conductors; others have wooden nuts or caps on their top gallant heads, which are less dangerous; but too many in the trade retain their spindles; and, therefore, it is no wonder, considering their multitude, that many are every year struck, and much damaged, and others sent to the bottom, and never afterwards heard of.

As resin is a non-conductor, or a repellent of the electric matter, so it has been observed, that when the deck of a ship has been well paid over with a coat of resin and turpentine, it has proved a means of preserving it, by strongly resisting the entrance of the lightning; and such an instance I remember to have read, of a small vessel that was struck on the coast of Guiney.

It is a good remark of Dr. Hales, that natural philosophy is not a mere trifling amusement, as some are apt to imagine; for it not only delights the mind, and gives it the most agreeable entertainment, to see in every thing the great wisdom, power, and goodness, of the Supreme Architect; but is also the most likely means of rendering the gift of kind Providence, this natural world, the more convenient and beneficial to us, by teaching us how to avoid what is hurtful, and pursue what is most useful and conducive to our welfare.

Thankful therefore ought we to be to that Gracious Being, who, at the same time that he has for wise ends involved some parts of his machinery in such concealment, as to be inscrutable by the human intellect, has, nevertheless, permitted our attainment of the useful parts of knowledge, or such as tend to instruct us in the better preservation of life and health.

Before I enter upon an examination of the different methods proposed for shaping and fixing the electrical rods, recommended for preserving buildings, I shall relate the history of some accidents by lightning, which fell within my notice or information, in Jamaica, because they will appear to corroborate very strongly the modern theory of that fluid.

In 1758, a white man having taken shelter under a large cotton tree

tree of several feet diameter, from a thunder shower, the lightning fell on the tree, severed it in two, and killed him; his body was driven to some distance by the force of the stroke.

From the effects, observed on trees that have been struck with any considerable flash, it seems, that the lightning, by suddenly destroying the air which surrounds them, or highly rarefying the air and aqueous particles contained within them, causes their tubes and vessels to burst asunder, much in the same manner as large blocks of solid wood are rent in pieces, by the expansion of gunpowder, which destroys their continuity.

Two Negroes ascending towards the summit of a hill, with iron bill-hooks on their heads, in a thunder-storm, were both killed by a stroke of lightning, attracted; no doubt, by the hooks.

1763, in September, the lightning fell twice in Spanish Town, but providentially hurt no person. The first stroke darted on a tall tamarind tree, and shivered it. The second, which happened Sept. 3, fell on two cocoa-nut trees about 50 feet high, which grew between the gate of a yard and the corner of a dwelling-house, about 15 feet lower from the ridge to the ground, and distant from the trees about 20 feet. There were other buildings near, which were taller than the summit of the trees. It was evidently attracted by the sharp apex of the spatha which rises from their crown, tapering into a fine point. After the lightning had cut off their tops, and set them on fire, it darted off to the hinges, and other massive iron work about the gates; it wrenched the posts, on which they were hung, out of their places, and shattered the gates. Another stream flew to a smaller gate about five feet high, directly in a line with the fore-door of the house, and not above twenty feet distant, wrenched the iron work, and damaged the gate; but not the smallest injury was done to the house.

On the 14th of the same month, the clouds appeared extremely black over Liguanea, and there seemed to fall a very hard rain.

The leeward edge of these clouds was high in the atmosphere, and extended over Spanish Town, but not sufficiently far to the Westward, so as to screen it from the sun. The air was consequently very sultry, and we had one severe clap of thunder, which, following the flash in a second of time, was supposed at no great distance from us. About ten minutes after two o'clock P. M. I was just about quitting my chamber, where I had been dressing, when I heard a violent bounce or shock against the door, as if some person on the outside had violently thrown the whole weight of his body at once to force it open; almost at the same instant, the sashes of the windows being up, I felt the impression of a sudden stroke of air upon me, such as happens to

to persons standing near the mouth of a cannon, when fired off; and immediately succeeding this shock, I heard thunder at some distance. I was at a loss to account for it, especially as, upon enquiry, I learnt that the whole house had been shook, and that the windows rattled as if an earthquake had happened; but as I felt no tremor in the floor, I could not ascribe it to that cause. Some Negroes, walking in the streets, saw a ball of fire descend towards Port Royal harbour, and presently after a column of blueish smoke arise, to which succeeded the shock of the explosion, for such it proved to be, of the powder magazine at Mosquito Point, distant from Spanish Town in a direct line somewhat more than seven miles. This magazine was built entirely of stone, bomb proof, and stood on swampy, sandy ground, close by a lagoon, and just within the N. E. bastion of the fort, next the harbour. As the nature of the foundation, from the near approach of water to the surface, would not admit the sinking of the floor, all the powder was ranged several inches above it, to be the more secure from damp exhalations.

On that day the whole sea-store of powder belonging to the Valiant man of war had been landed at the fort, and laid up in the magazine, and there were in it besides, about 2500 barrels; in all about 2900. The gunner, who attended the stowing it, had just finished his work; and having locked the door of the magazine, ran to the inlet of water which flows up along the North flank of the fort, where he hastily stripped off his cloaths, and plunged in, to wash away the smut and dust of the powder, with which he was plentifully besmeared. This probably saved his life; for, whilst he was diving under water, a ball of fire darted from the clouds, and the tremendous explosion immediately succeeded. A Negroe, passing in a boat between Kingston and Passage Fort, saw the lightning fall, and presently after the magazine blew up, causing such an agitation in the water round him (for he was at that time but a little way to windward of the fort) that he gave himself up for lost. A centinel, who was posted on the N. E. bastion of the fort, close by the magazine, on the first appearance of the ball of fire, had the presence of mind to jump through an embrasure, to the foot of the curtain next the harbour, and by this means was preserved. But another centinel, who stood at the entrance of the area, leading to the magazine, was instantly destroyed, together with almost every soldier and Negroe upon the esplanade of the fort, and two soldiers, who were walking on the beach of Saltpan Bay, near a mile distance, by the fragments of stone.

The magazine itself was torn up from below the foundation; even the very piles on which the first courses of masonry had been laid, were drawn out, as it were by the root, and thrown different ways; leaving a spacious hollow of 15 feet deep, and 50 feet over, which was soon converted

into a pond by the influx of water that drained into it. It was thought that the yielding of the sand in this part, proved the cause of the explosion's not committing so much havock, as otherwise would have happened if the soil had been rocky, and capable of resistance. The filling up this cavity took afterwards near 9000 ton of rubbish, and cost the country 1925*l.* sterling.

Within the fort, most of the guns (24 pounders) on the adjacent bastion were dismounted; and one gun thrown clear over the rampart into the harbour, from the N. E. flank, which was damaged for near 140 feet of the wall. A new building near the magazine, fitted up for the officers barrack, was tumbled into a heap of rubbish. The commandant's house was only in part demolished; and here lieut. Monsel, of the 74th regiment, was driven through a chasm made in a partition wall behind him, and so terribly wounded, that he died not many days after; the guard room, gunner's apartment, warehouse, and other offices, were very much shattered. The explosion, having vented its fury chiefly on these buildings, took very little effect on the soldiers barrack; this is a strong stone building, and at that time contained a great number of men, with their wives and children, none of whom providentially received any hurt, although a part of the roof at the N. E. hip was torn away, and many large stones fell like bomb-shells through the roof and floorings.

In short, what with the mangled carcases of the unhappy sufferers, the ruin and devastation of the buildings, and the dispersion of their materials over every part of the fort, the whole exhibited as shocking a scene, as if it had just undergone a furious bombardment.

There were killed in and near it,	4 officers, 1 officer's lady, about 25 private men, 11 Negroes,
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Total 41

Wounded (privates and Negroes) about	<u>50</u>
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Total killed and wounded, about	<u>91</u>
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The damage occasioned to the fort and buildings, with the lots of powder, furniture, utensils, &c. cannot be estimated at less than 43,000*l.* sterling.

The powder marked the course it took towards Passage Fort N. W. to a considerable distance, scorching the leaves and smaller branches of the mangrove trees the whole way; but that the whole of it was not enkindled, appeared from the black shower of unconsumed grains, which fell all about the houses at that place, near two miles distant from the magazine.

The

The shock impressed upon the air was very sensibly felt at Spanish Town, as has been related, where it damaged the roofs of two houses in a N. W. direction from the fort, and affected the doors and windows in general. The concussion was felt in a circle of 10 or 14 miles round. Some said, that windows were broke at the distance of 17 miles, but this wants confirmation. Such was the deplorable catastrophe occasioned by one flash of lightning. I shall now endeavour to trace the source of it.

The magazine had only one door, which was very solid, and hung with large strong iron hinges, to the Eastward. The windows, or air-holes, were likewise secured with lattices of iron wire. But, considering all circumstances, the very low situation of this door, and that on the ramparts (which were higher than the magazine) there was a line of guns, more likely to attract, and many shipping in the harbour, whose masts presented much nearer and more convenient conductors, it is not probable that the lightning was drawn down by any of the iron work used about that structure. The gunner declared, that, in shifting the powder, there was a large quantity of dust scattered about in the air; is it not then more likely, that the particles of powder were driven by the breeze to a certain height and distance in the atmosphere to leeward, until they came within the sphere of action of the electric matter in the clouds, then hovering over the adjacent country; that they were thus ignited, and thus communicated the flame in an immediate direction to the very door of the magazine? It is to be recollectcd, that the lightning made its descent but a very few minutes after the powder was carried in: and, upon the whole, therefore, this seems to me the most probable way of accounting for it; from which, if it really was the cause, we may conclude, that even an iron conductor placed upon, or near, the magazine, would not have preserved it; for there was then, in fact, a train of powder laid, and continued from the door, to the *fuse*, or electric fire in the nearest cloud.

The distance of time between the *aërial impulse* (from the expansion of the powder) and the *sound* of the explosion at Spanish Town (7 miles) was about *two seconds*, as nearly as I could compute; but, not being able to learn the exact time when the accident happened, I could form no calculation of the progress of the sound, for the given distance of place.

From the 14th of this month to the 26th of October, we had a great deal of thunder and lightning every day almost, with but few intermissions. On the 24th of October, in a squall of rain driven off the mountains, the lightning fell again in Spanish Town on a tree in a gentleman's garden, very near two houses. It destroyed the tree, and descending to a pepper bush at the foot, cut it asunder in the middle, but neither damaged the houses, nor hurt any person.

In 1766, it fell on the turret of Port Royal church, and damaged it very much. The powder magazine in Fort Charles, at no great distance from it, has a solid terraced roof of brick, of a conical figure, round which are fixed several iron hooks, for better enabling workmen to repair it. These were all corroded with rust, notwithstanding which, if they had lain within the sphere of action of the lightning's stroke, the consequences would, in all probability, have been very terrible and fatal.

In the Vale of Luidas (the date forgot) the lightning fell upon a bell, which was raised on a timber frame about 15 feet high, very near the gable end of a gentleman's house. The axis upon which the bell turned, had an iron handle fixed into it, to which the rope was fastened. This handle made an acute angle, presenting its point upwards, and so became an attractor. The bell was tossed to some distance, the frame shivered to pieces, and a splinter of it driven through one of the window-shutters, but no other damage occurred to the house.

Happening in the month of October to be traveling in company on the Northside, in the midst of the rainy season, the rain poured down in such torrents, that our cloaths were all dripping wet to the very skin; and my hat was so drenched, as to let the water percolate through like a sieve; in this condition we were suddenly enveloped with a multitude of little sparks of pale blue sulphureous fire, snapping like the electric discharges, but much smarter and louder, accompanied by one of the most dreadful claps of thunder I ever heard; my horse was so terrified, that he jumped at once upon a rock on one side of the road, where he stood trembling in every joint; I was obliged to dismount, and get him off as well as I could to a contiguous bank, and was not a little pleased, when I found that none of the company had been hurt. We attributed our escape to the quantity of rain water streaming from our cloaths and horses, which probably conducted away whatever particles fell upon us, though we were not sensible that any came so near. After this, my horse required neither whip nor spur to urge him on; for at every clap of thunder, though at a great distance, he mended his pace to the end of the journey.

In July 1767, the lightning struck the main mast of a merchant-ship at Morant Bay, and split it in pieces.

In the same month it killed a Negroe boy, who had taken refuge under a tree from the rain, near the foot of Guy's Hill in Sixteen-mile-walk.

And in this month it also fell on a cane-piece in the country, and burnt about eight feet square of canes. I examined the spot, but could not perceive any vestige of furrows, or perforations in the earth.

There was much thunder during this month and August; the weather, in the latter month extremely hot, and one day, in Spanish Town, the thermometer rose to 93, which was 1 degree higher than ever I remarked here, either before or since.

Being

Being, in the month of October, at a house in St. Mary's parish, after several dry, warm days, a heavy rain came on, and about two o'clock P. M. two very smart flashes of lightning were observed near us, the thunder following almost instantaneously. The house I was in stood on part of a high hill, and within about 200 yards of the summit, whereon a large cotton tree grew, at least 80 feet in height, and near the base of it was a bed of the sorrel plant: I had seen the sorrel in the morning looking very well, and healthy; but on the day after this thunder-shower, it appeared all blasted, and the leaves as if singed by fire; from that time it withered, and perished. It was concluded, that a stream of the lightning had fallen upon it; but it was a matter of the utmost surprize to find, that so vast and lofty an object as the tree did not appear to have sustained any damage, either in its limbs or bark; nor can I as yet account for it, unless by supposing, that every external part of the tree was wetted with the rain water, and thus gave an easy conduit to the electric fluid in its descent to the earth. As the progress of lightning is nearly instantaneous, and that of sound above one thousand feet, or (according to Sir Isaac Newton) about one thousand one hundred and forty-two feet in a second, the thunder and lightning happening nearly in the same instant, proves the explosion to have been very near us.

S E C T. VIII.

The means of preserving Ships, Buildings, and Persons from Accidents by Lightning.

First, in regard to ships. We are to guard against those thunder clouds, which come very near us. The mast of every ship which is beset with those bright lights called *comazants*, or the *feu de St. Elme* of the French, is within the sphere of action of a thunder cloud. Anciently, when these were seen, they were only considered as the attendants of a storm, and no consequence was drawn from them; but from the late discoveries, they are known to be no other than a modification of the same meteor which constitutes thunder and lightning. They demonstrate, that danger is near, and that its effects should be prevented. This may be done by connecting a rod of iron or other metal with the spindles at the top of the masts, and conducting it down their sides in any convenient direction into the sea water. By this means, the accumulation of the matter of thunder and lightning will be prevented, to a considerable distance from the ship, by its being silently discharged through the rod; and, if a stroke of lightning should fall, it will be conducted into the sea without damage, which

which cannot be done by the masts and yards themselves; for these from their height, figure, and constituent parts, without an apparatus of this kind, tend to direct and conduct the lightning into the ship. The application of such rods to the masts of ships is neither difficult nor expensive; as, a brass rod of $\frac{1}{2}$ an inch thickness may, in most cases, be large enough to answer this purpose. Brass is preferable to iron in hot climates, as being less liable to rust; and any metal, corroded with rust to the centre, ceases to be of any use, in directing the lightning, in the degree hoped for from such an apparatus. I have been informed by a gentleman, a native of Philadelphia, who had seen many of thisé apparatus fixed on houses in that province, that the iron conductors seldom rust there; but, by reason of very frequent discharges of the electric fluid through them, they acquire a fine steel-blue colour: and Mr. Franklin relates, that in course of some experiments for giving polarity to needles, were *they* sometimes finely blued, like a watch spring, by the electric flame, which was always the more permanently fixed, the greater the discharge that was sent through them.

In Jamaica, iron is very subject to rust and scale off; here, therefore, the rods had better be made of copper or brass, and painted or gilt; the coat of paint does not impede the descent of the electric matter through the metal, though a discharge of this kind will perhaps detach the paint, as was proved in an electrical experiment. In other respects, iron or steel is the best conductor, as being least apt to fuse; next copper; then brass; as in the following series:

Degrees of expansion by Muschen-	Iron.	Steel.	Copper.	Brass.
broeck's experiment . . .	80	85	89	110

I shall pursue Mr. Franklin's instructions in regard to the apparatus proper for securing buildings, stating at the same time his general theory on the operations of this fluid; as his remarks are not only curious but very useful, and necessary for better understanding this subject.

Whatever properties we find in electricity, are also the properties of lightning. This matter of lightning, or electricity, is an extremely subtle fluid, penetrating other bodies, and subsisting in them equally diffused.

When there happens to be a greater proportion of this fluid in one body than in another, the body which has most, will communicate to that which has least, till the proportion becomes equal, provided the distance from them be not too great; or, if too great, till there be proper conductors to convey it from one to the other.

If the communication be through the air without any conductor, a bright light is seen between the bodies, and a sound is heard. In the electrical experiments, this light and sound is called the electric spark and snap; but in the great operations of nature, it is called lightning and thunder.—If the communication of this fluid is by a conductor, it may be without either light or sound, the subtle fluid passing in the substance of the conductor.

If the conductor be good and of sufficient bigness, the fluid passes through without hurting it; if otherwise, it is damaged or destroyed. All metals and water are good conductors. Other bodies may become conductors by having some quantity of water in them, as wood, and other materials used in building; but, not having much water in them, they are not good conductors, and therefore are often damaged.—Glass, wax, resin, silk, wool, hair, feathers, and even wood perfectly dry, are non-conductors; that is, they resist instead of facilitating the passage of this fluid.

When this fluid has an opportunity of passing through two conductors, one good and sufficient, as of metal, the other not so good, it passes in the best, and will follow it in any direction.—The clouds have often more of this fluid in proportion than the earth; in which case, as soon as they come near enough (or within the striking distance), or meet with a conductor, the fluid quits them and strikes into the earth. A cloud fully charged with this fluid, if so high as to be beyond the striking distance of the earth, passes quietly without making noise, or giving light, unless it meets with other clouds that have less.—Tall trees and lofty buildings, as the towers and spires of churches, become sometimes conductors between the clouds and the earth; but, not being good ones, that is, not conveying the fluid freely, they are often damaged.

Buildings that have their roofs covered with lead, or other metal, and spouts of metal continued from the roof into the ground, to carry off the water, are never hurt by lightning; as, whenever it falls on such a building, it passes in the metals, and not in the walls.—When other buildings happen to be within the striking distance from such clouds, the fluid passes in the walls, whether of wood, brick, or stone, quitting the walls only when it can find better conductors near them; as metal rods, bolts, and hinges of windows and doors, gildings on wainscot, or on frames of pictures; the silvering on the backs of looking glasses, the wires for bells, and the bodies of animals as containing watery fluids. And, in passing through the house, it follows the direction of these conductors, taking as many in its way as can assist its passage, whether in a straight or crooked line; leap-

ing from one to the other, if not far distant from each other, only rending the wall in the spaces where these partial, good conductors are too distant from each other.—An iron rod being placed on the outside of a building, following the form of the roof or other parts, and continued from the highest parts down to the moist earth in any direction, strait or crooked, will receive the lightning at its upper end, attracting it so as to prevent its striking any other part; and affording a good conveyance into the earth, will hinder it from damaging any part of the building. A small quantity of metal is found able to conduct a great quantity of this fluid. Wire no bigger than a goose-quill, has been known to conduct (with safety to the building as far as the wire was continued) a quantity of lightning that did prodigious damage, both above and below it; in North America, it is common to make it of half an inch, some of three quarters, or an inch diameter.—Mr. Wilson is of opinion, that the conductors should be made of *one piece of metal only*, and of an equal diameter throughout. What this diameter ought to be, may depend on the magnitude of the building to be protected; but, since no one can fix the limits of the greatest discharge that may possibly happen, it is *safest* to use conductors, or rods, of such thickness as to promise security against the most violent attacks; therefore, a *goose-quill wire* is certainly not so safe as one of larger dimensions; and, in confirmation of this, we are told of a bar of iron of *one inch* diameter, erected in Martinico, which, by a violent stroke of lightning, was reduced in one part to the thickness only of a slender wire^o. A rod therefore of $1\frac{1}{2}$ inch diameter, or even 2 inches, will not be too large.—Chains are improper, as well as pieces of metal linked together, because the links though apparently in contact with each other, are not absolutely so, but are divided by spaces imperceptible to the eye; and the lightning, in endeavouring to pass from one link to another, frequently melts them by its violent action, whilst the other parts remain entire.—The rod may be fastened to the wall, chimney, &c. with staples of iron. The lightning will not leave the rod (a good conductor) to pass into the wall (a bad conductor) through the staples; it would rather, if were in the wall, pass out of it into the rod to get more readily by that conductor into the earth.—If the building be very large and extensive, two or more rods may be placed at different parts, for greater security.—The lower end of the rod should enter the earth so deep, as to come at the moist part, perhaps two or three feet; and if bent when under the surface, so as to lie in a horizontal line six or eight feet

^o I suspect there was a discontinuity, or some other defect in the substance of the bar, at that part of it, which caused an interruption to the free current of the electric stream through it.

from the wall, and then bent again downwards three or four feet, it will prevent any damage to the stones of the foundation.

For the *upper* part, Mr. Franklin proposes, that it should be raised six or eight feet above the highest part of the building; and that it should be tapered gradually to a fine *sharp point*, and the point gilt, to prevent its rusting.—But a difference of opinion has arisen concerning the use of *pointed* rods, instead of *blunt*, or unpointed.

Mr. Franklin's system is, “that *points* have an equal power to throw off, as to draw on, the electric fire.”—“That *points* attract electricity at greater distances in the gradual silent way; but that, *knobs* will attract a stroke at the greatest distance.”—“That *points* tend to repel the fragments of an electrified cloud; but that, *knobs* draw them nearer.”

To these positions Mr. Wilson has objected very substantial reasons.

That it does not appear that *points* draw off and conduct away lightning imperceptibly, without explosion, during a thunder storm; but, on the contrary, there are many instances, where violent explosions of lightning have happened to conductors that were *sharply pointed*, and three in particular, the account of which was given in Mr. Franklin's publication; where the *points* were dissipated or destroyed, and a small part of an iron rod melted at the place of the point's insertion.—That every point is to be considered as *soliciting* the lightning, and, by that means, not only contributing to *increase* the quantity of every actual discharge; but also frequently occasioning a discharge, where it might not *otherwise* have happened. If, therefore, we *invite* the lightning, whilst we are ignorant of what the quantity or the effects of it may be, we may be *promoting* the very mischief we mean to prevent. Whereas if, instead of *pointed*, we make use of *blunted* conductors, those will as effectually answer the purpose of conveying away the lightning safely, without that tendency to increase or invite it.—Points are meant to *invite* or draw off the lightning continually; but we find, from experience, that they are extremely subject from their *tenuity* to be melted down, and destroyed; they are, therefore, so far rendered useless and vain, as no one can exactly say what the duration, or what the effects, of any storm of lightning may be; and many difficulties may occur in the timely replacing of such as are so melted, or rendered useless. Lightning acts with more power upon *sharp points*, than blunted ends, in the proportion of at least 12 to 1. And as *blunted* conductors, of sufficient dimensions, are found capable of conveying away the lightning safely whenever it attacks them, why should we have recourse to a method which is uncertain, and may be dangerous?

A former building on the Eddystone rock was set on fire by lightning. The fixing a conductor therefore on the present light-house was thought highly proper; and it was resolved to put up a conductor *without a point*, that no lightning might be *unnecessarily* solicited to the building; and that all the lightning, which accidentally should fall on it, might be conveyed away without injuring it. This conductor was fixed *twelve years ago*, and the building has since received no injury from lightning.

Upon the same principle this gentleman protests against elevating the conductors or rods too great a height above any building. “*The longer the conductors are above any building, the more danger may be apprehended from them; as they will then approximate nearer in their effects to those that are pointed.*”

It is, I think, pretty clear from the remarks offered by Mr. Wilson, that Mr. Franklin, when he made his electrical experiments, was considering only how he should best *invite* or *draw down* the matter of lightning; and that he found *sharp points* answered this purpose better than others. But the great and essential principle being, “*that lightning, when it descends towards the earth, prefers a metallic conductor to every other, and will readily leave any other for it;*” the conclusion is plain, that there can be no possible reason given, why we should use methods to *invite* a stroke; since all that is required for our security is, to catch that body of lightning on a metallic conductor, and convey it safely into the earth; which body of lightning would otherwise, and if no such metallic conductor had been provided, have entered the substance of the building, and perhaps laid it in ruins. I have seen several points taken from rods or conductors that had been struck by lightning in North-America, and the metal of all of them appeared to have been greatly affected by the electric action; the fine *apex* of some was dissolved into a little round ball; others had undergone a greater degree of fusion; whilst some were only bent into a crooked figure, but the points of all were rendered obtuse. This variety of effect was occasioned by the greater or less quantity of the fluid which had fallen on them; the points, by reason of their *fineness alone*, were fused or dissipated, as a very small wire would have been in the same situation, whilst the thicker parts, and the rods themselves into which they had been riveted, remained uninjured, but conducted the lightning safely to the earth; whence it is certain that, if no such points had been fixed in the rods at all, the latter wou'd have conducted equally as well without, as with them.

Many

Many of the houses in Jamaica are constructed with hip roofs. A perpendicular piece of wood, or a small mast, might be erected against the wall, at one or both ends of such houses, at such an elevation as to support a copper rod rising about three feet above the ridge. If an iron or steel rod is made use of, it ought to be frequently painted, to hinder the air from corroding it.

Buildings made of fir entirely, having no metal for the fastenings, ornaments, or conveniences, are the least liable to be attacked by lightning. Houses therefore covered with pitch-pine shingles are in some degree securer than others, so long as their turpentine or resin remains unexhausted.

Sulphureous and inflammable vapours arising from the earth are easily kindled by lightning. So also the vapours sent out by stacks of moist hay, corn, or other vegetables, which heat and reek. Wood rotting in old trees, or buildings, suffer the like effect. Such are therefore easily and often fired. Thatch appears therefore to be an improper covering for building. And it may be owing to this, that old thatched barns are so frequently fired in England by lightning.

For securing magazines of powder Mr. Franklin proposes the erecting a mast not far from them, which may rise some feet higher than the top of them, with a thick iron rod (*e. g.* four inches square) in one piece, fastened to it, and reaching down through the earth till it comes to water, which lies not far from the surface in the places where such buildings are commonly situated. Iron is a cheap metal; but if it were dearer, the expence is insignificant, considering the important service to which it is applied. The rod is advised to be of this thickness, to allow for its wasting by rust; which however might be retarded by painting with common white lead and linseed oil; it will probably last as long as the mast, and may be renewed with it.

A person apprehensive of danger from lightning, happening during the time of thunder to be in a house not secured by a rod, will do well to avoid sitting near a chimney, a looking-glass, any gilding on pictures or wainscot. The safest place is the middle of the room (so it be not under a metal lustre supported by a chain) sitting in one chair and laying the feet up in another. It is still safer to bring two or three mattrasses, or beds, into the middle of the room, and, folding them up double, place the chair upon them; for they being not so good conductors as the walls, the lightning will not chuse an interrupted course through the air of the room and the bedding, when it can go through a continued and better conductor, the wall. But, where it can be had, a hammock, or swinging bed, suspended by silk cords,

equally distant from the walls on every side, and from the cieling and floor above and below, affords a tolerably safe situation in any room whatever; and what indeed may be deemed quite free from danger of any stroke by lightning, except what may happen from splinters, or other materials violently scattered about by the force of an explosion. The best security, and the only one to be relied on, is, however, a rod or metallic conductor; which in countries particularly subject to thunder and lightning, ought to be fixed at every building. It is true that not many buildings are struck, nor persons destroyed, in a year; but in all countries there are particular situations more exposed to such accidents than others, and there are minds so strongly impressed with the apprehension of them, as to be very unhappy every time a little thunder is within their hearing; the advantage of fixing such conductor does not therefore consist alone in making us *safe*, for it contributes also to make us *easy*. The stroke it secures us from might have chanced perhaps but once in our lives; but it relieves us a hundred times from those painful apprehensions, which disturb our happiness.

Terrible as this fluid appears when left at liberty to do mischief, it is certain, that with respect to its operation upon animal bodies the effect is so instantaneous that no pain can be felt; it is the easiest of all deaths; and in this the mercy of the Divine Being is obviously manifested: the particular uses of it in the grand machinery of the world are not as yet investigated to any extent, but as far as they are discerned it appears subservient to a variety of great and beneficial purposes.

A physician at Paris is said to have introduced the practice of electrifying the bed-chambers of sick persons, by exciting fresh currents of the etherial fire, and thereby expelling noxious vapours, or a pestilential disposition of the atmosphere; and it is asserted, that this method has been found, on repeated experiments, a far greater purifier of foul air than even a ventilator.

The lightning, which causes so much dismay, contributes doubtless to the preservation of animal life, and the prevention of pestilential distempers; such of them, at least, as owe their origin to a putrid, stagnated, and contaminated atmosphere. They could not probably be dissipated, and the air restored to salubrity, without the agitation of winds, or the virtues of this subtle fluid excited into action; this, by consuming the sulphureous and malignant vapours, which made the air detrimental to health, adapts it to sustain the life of men and other animals, and probably even of vegetables. Ordinary observation

on

on the different state of the atmosphere, before and after a thunder-shower, confirms this. The air before these showers fall is usually close, suffocating, and sometimes even putrid. But afterwards, what cool, refreshing and delightful sensations arise from the change which lightning has occasioned, by burning away those foul vapours! It is more particularly necessary in climates where the heat of the sun is continually loading the air with corrupt and insalutary exhalations. We find therefore the largest supply of lightning distributed to such regions which are most in want of it; and by the wisdom of the Divine mechanism, it is likewise provided for the coldest climates, though but rarely distinguished there by any visible action, except at those seasons of the year, when by the greatest summer-heats, which fill their atmosphere with morbid *effluvia*, it becomes most useful and necessary to correct them.

Dr. Hales therefore well remarks, that such a sulphureous state of the air is very prejudicial to the inhabitants of some countries; and, when of long continuance, makes them *wish for lightning* to purify it. So powerful and ductile an agent is doubtless applicable to a thousand good purposes; and, in addition to what have already been spoken of, let me add, that it subdues the most tempestuous winds, and is to be deemed the chief preventative of that universal devastation such winds would always cause within the Tropics, if they were not restrained by the effects of lightning; and which they never fail to produce, when those effects are for a time suspended.

S E C T. IX.

RAIN.

The usual prognostics of rain in the Southern parts of this island are, lightning at windward—large towering clouds—fleecy or black, rising in the South-east, the South, or South-west—great heats and faint light sea-breezes for some weeks or days—immediately before the fall of rain a Westerly or North-westerly wind, for the most part gentle: at the same time heavy clouds, with thunder approaching the land from the Southern points—the tops of the Blue Mountains appearing perfectly clear of clouds or mists—the objects upon them tolerably distinct, seemingly much nearer than usual, or the whole wearing a blueish cast—great flashings of lightning at night in the Southern hemisphere, betoken rain in sixteen or eighteen hours. After three weeks of dry weather, a slight shock of an earthquake was felt at ten in the evening: to this succeeded a violent rain in the mountains at two in the afternoon the next day. On a change of wind from the South-east

to North or North-east, and *vice versa*, the clouds to the Eastward seem collected in huge piles, and presage rain, which seldom fails accompanying these changes. When cockroaches are observed in dwelling-houses towards evening, flying and running about in great hurry and confusion, a shower may be expected very speedily. A more than unusual disturbance and noise of rats in the night-time is likewise a pretty certain prognostic.

In November, on a change of wind from North or North-east to South-east, drizzling showers generally follow. When the evenings are close and sultry at the full moon, or a day or two before or after, and a bur surrounds her disk very near, rain will probably soon happen. Heavy black clouds from the South and South-west always bring rain and wind.

In August, after dry weather, when there is much heat in the air, and but little breeze, if a wind springs up from the North, rain and thunder may be expected.

In September, October, November, and May, sultry, calm weather, and great corruscations in the evening round the horizon, are certain forerunners of a hard rain, and most commonly thunder. Towards the latter end of September, when the wind is gentle, fluttering, and at no settled point, the clouds fluctuating different ways, large towering clouds appearing (if in the day-time) of a reddish hue, rain and thunder may be expected from the Southward.

If in the month of October the roaring of the sea is heard at Spanish Town, when the atmosphere aloft is hazy in the morning, as if a mist was elevated to a great height, these are indications of approaching heavy squalls with rain.

Rain most frequently happens after the full of the moon.

A thin scud observed towards evening, flying quickly from any quarter, portends a smart wind in the night from that quarter, either with or without rain, but more generally with.

These tokens rarely fail. The heaviest rains do not fall here exactly at the time of the equinoxes; but usually about thirty days before the Vernal, and as many after the Autumnal; but the latter conform to more regularity in their periods; and when the Vernal seasons fail, the Autumnal are sure to be more plentiful and of longer continuance than usual.

There is every reason to believe that the rains happen very differently now, both in time and quantity, in this island, from what they formerly did; I cannot produce a better testimony of this change, than by exhibiting the state of them at Spanish Town in 1688, and comparing it with recent observations.

The following is Sir Hans Sloane's Table for that year, abridged for greater perspicuity.

Months.	North Wind Days.	Sea Breeze Days.	Calm Days.	Rainy Days.	Thunder Days.
January	10	21	00	9	00
February	4	21	3	8	00
March to the 17th	00	8	1	6	00
April	no observation				
May		30	1	9	8
June		29	1	8	3
July		30	0	6	3
August		28	variable	12	5
September	1	23	3	16	3
October		23	3	10	2
November	6	21	0	12	0
December	16	14	5	7	0
	—	—	—	—	—
	37	248	14	103	24

The following table is formed upon observations registered for eight years, commencing *anno 1752*; but it is to be remarked that they were not taken in Spanish Town, but nearly in the same parallel, and just within the South-side mountains. But as in those mountains a greater quantity of rain may be supposed to fall than on the level maritime parts, and less than in some of the North-side, Eastern and Western, an allowance should be made on that account.

Heavy rains or moderate showers, in eight years, compared with Sir Hans Sloane's table.

Months.	Days.	Sir H. S.	Months.	Days.	Sir H. S.	
January	6	72	May	58	72	
February	17	64	June	55	64	
March	19	48	July	55	48	
April	41	no obs.	August	58	96	
November}	32		September	65	128	Total in 8 years
December}	32	152	October	76	80	488
	—	336		—	—	824
	115			367		482

TABLE of one year's rain at an average taken from 1761 to 1764,
compared with Sir H. Sloane's.

	Medium.			Medium.	
	1688.	1761 to 1764.		1688.	1761 to 1764.
January	9	days 3		July	6 days 00
February	8	4		August	12 1
March	6	6		September	16 8
April	no obs.	4		October	10 10
May	9	6		November	12 6
June	8	5		December	7 00
	—	—			63 25
	40	28			40 28
					103 53

In the former comparative table I multiplied Sir H. Sloane's total of ten months and seventeen days by eight, in order to make it more agreeable to the eight years observation compared with it. From these tables, it appears very probable, that full twice as much rain fell in and about Spanish Town about eighty or ninety years ago as falls now.

In the latter table for one year, if we suppose that from the 17th of March to the 1st of May, a space omitted by Sir H. Sloane, and at a time of the year when rains generally happen, there were in forty-four days (the space omitted) only three rainy days, which surely is a very low computation, it follows that there were just twice as many rainy days in the year as at present.

Hence we may conclude that the heat is not so incommodious now as it formerly was, for a damp hot air is not only more distressing, but more unhealthful than a dry hot air. We cannot well account for this difference otherwise than by suspecting that the climates of most countries on the globe undergo some change in the revolution of many years; and, exclusive of this, we are to ascribe something to the clearing of woods in the mountainous parts, which has given a freer scope to the wind and vapours. The atmosphere of the town and adjacent country is probably more cool and pleasant than it was in Sir H. Sloane's time, when, by confinement of vapours, the weather must have been often very sultry. The lowlands now are less frequently refreshed with rain, but they are the less annoyed with muskeetos, and therefore more pleasant for habitation. Yet Sir Hans speaks of them in a favourable manner. "The air, says he, may well be affirmed temperate, in that the heat of the day is qualified by the length of the night, so that the sun has not time sufficient to heat

" heat the atmosphere to so great a degree, as where the days are longer, and the nights shorter, or none at all." He adds, " that he never found more heat here, than in some vallies near Montpelier; and that the savannahs are the more temperate, because the sun-beams are but very little reflected on the body in these open plains; and the hills adjacent to them are not high enough to interrupt the current of the wind, or to reverberate the sun's heat." This however must be understood only in a general view, for some of these savannahs are encircled by high lands; but those which run down to the coast, which perhaps were chiefly alluded to by Sloane, are less hemmed in than any other.

The rain precipitates in this island with a violence rarely seen in England, especially in thunder-showers; a traveler, overtaken by one of them, will find no garment, except a cloak of oiled stuff, sufficient to guard him from being soaked to the very skin. I have known the water, after about half an hour's riding in such a shower, percolate in rills through a flapped hat. On these occasions it is always most prudent to ride a brisker pace than usual, in order to keep up the perspiration, especially in the evening. We may apply in effect to the rains in this island, what lord Orrery remarked on those of Italy, just changing the name of place. " After being accustomed to them, we think the clouds only drop in *England*; but here they melt in instantaneous cascades. In *England* they only produce showers; with us, they pour down cataracts. In truth, the difference is amazing."

A heavy fall of this kind was observed to penetrate seventeen inches into the earth. The soil was what is distinguished here by the name of brick mould.

General quantity of rain in one year at the places undermentioned.

Lowlands of England.	Hilly parts of England.	Pisa in Italy.	Paris.	Surinam.	Barbadoes.	Mountains of Jamaica.
Cubic inch. 22	42	43 $\frac{7}{10}$	19 $\frac{1}{2}$	48	58 $\frac{8}{15}$	63 $\frac{7}{15}$
Perp. feet.inch. F.	I.	F.	I.	I.	F.	I.
1 10 3 6 3 7 $\frac{7}{10}$		1	7 $\frac{1}{2}$ 4	90	4 10 $\frac{8}{15}$	5 3 $\frac{7}{10}$

Taking the whole island throughout, sixty-five to seventy inches appear to be about the medium of rain that falls upon it in seasonable years.

In those districts where the woods are thick, lofty, and extensive, as in Portland, St. George, the interior parts of Clarendon, St. Elizabeth, and St. James, there is an almost daily drizzle. So along the whole midland range, the condensations must be very frequent, other-

wise those vast rivers, which burst forth at a prodigious elevation among them, could not be so plentifully supplied at those times when the lowlands are parched with drought. Not that they owe the whole of their waters to the rain that falls here, for they undoubtedly derive the greatest portion from the ocean, by percolation, or some other subterraneous process of nature. But they receive a large increase from rains and dews. If these woody parts were cleared, the rains that might fall there would be more moderate, and the rivers would lose a part of their bulk. This visibly has been the case with respect to some others, which antiently ran much higher than they do at present; for being laid open to the sun and wind, the quantity lost by evaporation, together with what is diminished for want of the usual supply from dews and rains, their streams must necessarily decrease to a certain degree. Yet as the condensations proceeding from the height of ridges would still continue, therefore these midland parts would still have rains sufficient, though probably but seldom so excessive as at present; and thus they may be said to inherit a permanent fertility, which will insure success to their cultivators in the driest years ever likely to happen here.

Extraordinary falls may sometimes happen, which may unusually augment the annual calculation, for no two years are or can be exact; but an average of six or seven may turn out nearly so. One or two dry years are almost uniformly succeeded by one or two wet ones, so that what fails in one part of the average number, is perhaps made up pretty regularly in the other.

The rain which fell in this island during the hurricane (Oct. 20, 1744) was measured by an ingenious gentleman, and found to equal the general quantity that falls in England in a whole year.

So in the year 1754, the fall at Barbadoes was $87 \frac{1}{10}$ cubic inches, equal to 7 feet $3 \frac{1}{10}$ inches perpendicular. Whereas the medium of five years amounted there to no more than $64 \frac{1}{10}$, equal to 5 feet $4 \frac{1}{5}$ inches, far too little for its necessary supply.

Seven inches are allowed in most parts of Europe for evaporation; what remains is supposed to replenish the earth and vegetables with moisture, and supply the waste of springs and rivers. But as the evaporation must be in a far larger quantity in the West-Indies than in Europe, so we must use some proportion in applying the rule to both places. The evaporation in Jamaica is constant all the year through; indeed, from some late discoveries, there are grounds to suspect that it never ceases in the coldest countries, proofs having been given of an evaporation even from ice. However, in Jamaica it suffers no interruption from a defect of heat in the earth or atmosphere.

Now

Now as seven inches are about one third of the fall in the lowlands of England, we may venture to subtract one third from what may generally be supposed to fall in Jamaica. Making a deduction then of 21 inches for evaporation, there remain 42 inches, or 3 $\frac{1}{2}$ feet for the purposes beforementioned; nor will this be thought too much in a country where vegetation is so rapid and luxuriant, and which abounds with so great a multitude of rivers, rivulets, and springs. But we cannot allow much more for evaporation, considering that the earth here in most parts absorbs the rain very greedily and copiously, and that in other parts the sharp descent of hills and mountains discharges it into the rivers almost as fast as it falls. If the island was entirely clear of its woods, perhaps a much less quantity of rain would fall than at present; but what is now supplied is not disproportioned to the demand of its vast forests, which probably could not vegetate with less; and, being attractors, they are doubtless the cause of much more frequent showers than would otherwise happen: for the scale of nature is nicely poised in this respect, and every part of the machinery corresponds, according to a most wonderful plan of harmony and fitness. We cannot but remark the goodness and wisdom of the Deity, in thus admirably adjusting his distributions. If a quantity of rain equal to 87 cubic inches, or even 63, should annually fall in England, that country would be deluged; the fruits of the earth would perish, and the farmer's toil be vain. The power of the sun at that distance from the equator would be too feeble to exhale a sufficient quantity of it. On the contrary, if so small a portion as 21 inches only should fall in the whole year at Jamaica or Barbadoes, this would scarcely be half enough for sustaining or promoting vegetation in those islands. After balancing the daily exhalation caused by the solar heat and constant breezes, the ground would be left parched, and every herb, plant, and root, would probably die, fountains and rivers be dried up, and the miserable inhabitants be extinguished by thirst and famine.

The like wise provision and combination are likewise discernible in those showers which are so often seen descending on the mountainous parts of Jamaica, whilst the lowlands receive not a drop. The steep acclivities of many of their ridges, like the roof of a house, throw off the water with a velocity not much inferior to that with which it falls upon them; hence the soil of such parts would soon grow infertile, if it was not so frequently moistened with seasonable sprinklings. The lowlands, not permitting the rain that falls on them to run off so speedily, retain their humidity much longer; the

water here sinks deep, and the mountainous reservoirs supply the springs and wells below with a liberal store.

I have no measurement of the dews which fall in this island, but in many parts of it they are very considerable, insomuch that in one of the mountainous districts, where there is a scarcity of springs, the cattle are sufficiently watered by the dew which overspreads the herbage every morning; in general, in the mountains, it is so heavy that a person, walking among grafts, or through a cane-piece early in the morning, would soon be as wet as if he had gone through a river. It is always least before heavy rains, and most copious in the cooler months of the year. Yet I observed once, in the month of January, that, although the weather had been very warm for the time of year, and dry, with strong sea-breezes night and day, which are not common in this month, the dews in the South lowlands were unusually heavy. In Spanish Town they are much larger than in Kingston, owing perhaps to the vicinity of the Rio Cobre. Hail is a phænomenon that has often been observed here. In 1757, a shower fell at Port Royal. The flakes were some of them large, but soon dissolved. In the midland mountains it is more common; transient showers happening almost every year, generally in August, or September. They fall from thunder-clouds, floating at a considerable height, and produce a sudden great change to coolness in the air. The freezing point in this atmosphere is probably not higher than about two miles and three eighths in the hottest season of the year [n]; since, on the summit of the mountain Pichincha, in Peru, which is little more than two miles and an half in height, and under the line, the thermometer [o] was observed, on the 17th of August, to sink four degrees below the freezing point, about six o'clock in the morning.

S E C T. X.

THERMOMETRICAL REMARKS.

Comparison of Heat and Coolness, during one Year, between Charles Town, in South Carolina, and Spanish Town, in Jamaica.

Month.	Place.	Hottest.	Coollest.	Difference in a Month.	Medium.	Medium of 3 Months in Spa- nish Town.	Medium of six Months.
January,	Charles Town,	56	18	38	40	78	75
	Spanish Town,	83	76	7	80		
February,	C. T.	79	32	47	57	82	80
	S. T.	85	66	17	76		
March,	C. T.	80	41	39	64	86	84
	S. T.	84	71	13	78		
April,	C. T.	87	49	38	68	90	88
	S. T.	86	67	19	77		
May,	C. T.	93	60	33	73	94	92
	S. T.	87	77	10	82		
June,	C. T.	92	67	25	80	96	94
	S. T.	88	84	4	86		

[n] About twelve thousand five hundred feet.

[o] Of Reaumur's construction.

July,

July,	C. T.	100	73	27	85	85	81
	S. T.	88	80	8	84		
August,	C. T.	96	64	32	80	78	
	S. T.	92	81	11	87		
September,	C. T.	84	64	20	75	78	
	S. T.	89	77	12	83		
October,	C. T.	83	53	30	70	78	
	S. T.	87	73	14	80		
November,	C. T.	74	44	30	60	78	
	S. T.	79	71	8	75		
December,	C. T.	76	24	52	53	78	
	S. T.	79	70	9	75		

Register for six Months, carefully taken in Spanish Town in a different Year subsequent to the above, and by different Instruments, but graduated in the same Manner, or *per Fahrenheit's Scale*.

Month.	Highest.	Lowest.	Difference	Medium in one Month.	Medium of three Months.	Medium of six Months.
July,	86 $\frac{1}{2}$	68 $\frac{1}{2}$	18 deg.	86	81	86 $\frac{1}{2}$
August,	85 $\frac{1}{2}$	67 $\frac{1}{2}$	18	76		
September,	85 $\frac{3}{4}$	66 $\frac{1}{4}$	19 $\frac{1}{2}$	76	74 $\frac{1}{4}$	74 $\frac{1}{4}$
October,	85 $\frac{1}{2}$	67	18 $\frac{1}{2}$	76 $\frac{1}{4}$		
November,	84	63 $\frac{3}{4}$	20 $\frac{1}{4}$	73 $\frac{1}{4}$	74	62
December,	81 $\frac{1}{2}$	62	19 $\frac{1}{4}$	71 $\frac{3}{4}$		

This table is found to differ from the preceding four degrees in the general medium; which I know not how to account for, except from the different diameter of the tubes made use of; so that it is impossible to decide which of the two measurements is the more to be depended upon. This point must remain to be adjusted by the result of future accurate observations. Mean heat observed in Kingston, April, May, June, and July, eighty-one degrees.

Comparison of the Air's general Temperature in a whole Year at the Places under-mentioned (*per the first Table*).

	Greatest Heat.	Greatest Cold.	Difference in one Year.	Medium.
Charles Town,	100	18	82	59
Spanish Town,	92	66	26	79
Surinam,	90	72	18	81
Barbadoes, according to Hillary,	86	70	16	78

Thermometrical Range in Spanish Town, according to Observations in four Years, taken with the same Instruments as the first Table.

Degrees,	Greatest Variation in one Month.	Smallest in one Month.	Highest Station in one Year.	Lowest in one Year.
Funchal, in Madeira, same time,	18	1	92	66

Temperature observed in different Places.

Place.	Latitude.	Year.	Month.	Degree.	Medium.	Spanish Town Medium.
Panama,	9° 00' N.	1736	January	71 a 79	75	80
Jamaica, in the country West of Spanish Town,	17 35 N.	1759	February	65 a 81	73	76
Guayaquil,	2 11 S.	1636	April	74 a 82 $\frac{1}{2}$	78 $\frac{1}{2}$	77
Quito,	0 30 S.	ditto	May	54 a 62	57	82
Bath, in England,	51 20 N.	1764	ditto	78	Quito,	

	o	30	S.	1736	June	54 a 57	55 $\frac{1}{2}$	86
Quito,	51	32	N.	1748	ditto 11th	85 $\frac{1}{2}$		
London,	49	32	N.	1750	ditto	100		84
Philadelphia.	49	32	N.	1755	July,	80		
Paris,	43	15	N.	1748	ditto	85		84
London,	51	32	N.	1762	ditto	80		
Ditto,	51	32	N.	1760	ditto	72 a 75	75 $\frac{1}{2}$	84
Funchal, in Madeira,	32	33	N.	1735	August	80 $\frac{1}{2}$		
Paris,	48	15	N.	1735	ditto	80		84
Bristol,	51	30	N.	1765	ditto	79		
London,	51	32	N.	ditto	ditto	86 $\frac{1}{2}$		87
Ditto,				ditto	1773	ditto	82	
Poole, near Portsmouth,	50	40	N.	ditto	ditto	82		87
St. Eustatia,	17	25	N.	1760	ditto	82 a 84	83 $\frac{1}{2}$	
Curaçao,	12	25	N.	ditto	ditto	83 a 90	86 $\frac{1}{2}$	83
Ditto,				ditto	September	83 a 89	86	
Ditto,				ditto	October	81 a 87	84	80
Ditto,				ditto	November	74 a 84	79	
Cartagena,	10	25 $\frac{1}{2}$	N.	1735	ditto	78 $\frac{1}{2}$ a 81	79 $\frac{3}{4}$	75
Curaçao,	12	26	N.	1760	December	77 a 80	73 $\frac{1}{2}$	
Porto Bello,	9	35	N.	1763	ditto	72 a 76	74	75
New-York,	49	24	N.		Summer Months	96 a 98		
Surat,	21	30	N.		ditto	105		75
Senegal,	16	N.		1763	December	93		
Sierra Leon,	7	N.		ditto	ditto	98		75

The foregoing table having been founded upon the observations of different persons, taken at different times, I am incapable of vouching for the accuracy of them. But, supposing them tolerably faithful, I think it will appear, that the Asiatic and African climates are, in general, hotter than the American; and that, of the American climates, those which lie under and near the Line are, in general, very temperate. The different degrees of heat and cold in different places, under the same meridian, depend chiefly upon the accidents of situation, with regard to mountains, valleys, and soil. Where there are vast high mountains, whose summits are all the year covered with snow, as those under the Line in the South-American continent, the winds which come over them must necessarily chill the air of all the adjacent country. In other respects, and under different meridians, the diversity has been supposed to arise from the different angles under which the sun's rays strike upon the surface of the earth, and the longer or shorter continuance of their action: and, from this consideration, Dr. Halley has grounded a very consistent theory; from whence he deduces two positions, first, that the Tropical sun, under the Equinoctial, has, of all others, the least force; secondly, that, under the Pole, it is greater than any other heat whatsoever, being to that of the Equinoctial, as five to four.

But this may appear clearer from one column of his table, which I fix upon, as it includes the hottest part of the year felt in the West-Indies, viz. June to September.

Lat.

Lat. N.	Sun in ☽
0°	18.341
10°	20.290
20°	21.737
30°	22.651
40°	23.048
50°	22.991
60°	22.773
70°	23.543
80°	24.673
90°	25.055

From this table we find the heat of the Northern part of Greenland, which lies in lat. 80°, compared with the heat on the Northern part of Hispaniola, which lies in lat. 20°, is as 24.673, to 21.737, on some days when the sun is moving through this quarter of the Ecliptic; for it is the length of time that the heat is applied to any particular country, as well as the degree of it, that determines the quantity of heat communicated to it. Where, therefore, the days and nights are of pretty equal length, the sun's heat cannot exert itself so powerfully, as where there is no night, and consequently no interruption to its action for many months; and the heat, which arises simply from the presence of the sun, is, from Halley's theory, reducible to this problem, viz. that the sun's heat, for any small portion of time, is as a rectangle, contained under the sine of the angle of incidence of the rays producing heat at that time.

For these complicated reasons, although, when the sun is vertical, and darts a perpendicular ray, it is supposed to strike with greatest force; yet, in those countries where it is vertical twice a year, in passing to and from the Tropic of Cancer, the greatest heat is not during the instant of its verticalities, but some weeks after, when it is returning from one Tropic to the other, and its rays oblique.

A Dutch captain asserted, that he had been quite under the North Pole, where he found the climate as temperate as at Amsterdam, and the sea quite open. This assertion has been deemed not improbable, considering that the sun's rays, though falling very obliquely in that latitude, must nevertheless produce a very great degree of heat, from his long continuance above the horizon; so, notwithstanding the obliquity of the rays, it is found, that in the middle of summer the thermometer sometimes rises higher in Sweden, and at Peterburgh, than under the Line.

But, for the better comparison of climates, and the degrees of heat, under different or under parallel latitudes, it is greatly to be wished, that

that we were furnished with more registers, and those formed with more regularity. To be correctly accurate is scarcely to be expected, since thermometers, graduated alike, often vary much from each other in their indications. But what chiefly impedes the enquiry is, that experiments, made in different parts of the world, are by instruments of very different graduation. If one standard thermometer was universally in use, a comparison of remarks or registers, formed in different parts of the globe, or in the same country, would be very practicable, and lead to a knowledge of their respective temperatures with far more precision.

The thermometers I made use of were a spirit and a mercurial, both of them graduated according to Fahrenheit. Yet, upon comparison, the former always rose two degrees higher, excepting in one instance, in April 1762.

The weather, having been sultry and showery for some time, became on a sudden very cool, and cleared up; when, to my great surprize, I observed the mercurial thermometer had risen two degrees higher than the other. I could only account for this, by supposing, that, as the parts of mercury are more susceptible of immediate impression from changes of the atmosphere than those of spirit, they are likewise sooner affected with any sudden rarefaction or density. The elasticity of the air in the upper part of the tube has been found sometimes to overcome the expansion of the spirit; and often the air, when very hot, is said to make the spirit rise disproportionately high in the tube, when what is contained in the ball is not equally affected.

The ball of my spirit thermometer was covered with a mahogany cap; upon taking off which, in the month of February, the liquor sunk immediately two degrees. I left it uncovered a whole night; and, early in the morning, after suffering the night air to blow upon it freely, through a window left open for that purpose, I perceived it fallen six degrees lower than had been usual when the cap was on.

I observed frequently, that, the house being shut up all night, upon viewing the thermometer in the morning before the sun was any height above the horizon, the air within doors was warmer by five or six degrees than the air abroad.

Similar variations have been remarked in London.

1748, June 11, the thermometer out of doors, in a shaded air, was at —————— 8 $\frac{1}{2}$
 Within doors, at —————— 68
 a difference of fifteen degrees and an half; which is almost incredible.

At nine in the evening, without doors, —————— 74
 5 Within,

Within,	—	—	—	—	71
July 23, Without doors, at noon,	—	—	—	—	84
Within, at 1 P. M.	—	—	—	—	85

On the 11th of June the thermometer within doors, at nine in the evening, was higher than at noon; though the thermometer out of doors fell considerably. The reason assigned for this was, that the air without was still warmer than the air within, and continued to communicate its heat to the internal air. So Mr. Rouppe, at sea, in the month of July, 1760, in latitude 18° N., found the open air at night six degrees cooler than the air between decks. If thermometers, used in Jamaica, were suspended in a shady place out of doors, where they would be more affected by changes in the atmosphere, the tables of heat and coolness for that island might be far more accurate. The air within doors there, especially in the towns, is in general much hotter than the air of any shaded place without. Hence the degree of heat may be erroneously supposed many degrees higher than what it really is. On the other hand, in England, where the houses are much loftier, the walls more massy, and many apartments impervious to the sun, and where its rays never enter into rooms of a Northern exposure; the air within doors, on the hottest days, is much cooler than without; and observations, taken there by a thermometer suspended always within doors, will consequently give a fallacious register of the heat of summer air, and often represent it to be much less than it really is, as the example above cited most clearly demonstrates. In making observations in Jamaica, (where the inhabitants are *amphibii*) regard should be had to the sun's station, whether in the Northern or Southern Tropic. When he is in the former, the instrument should be placed in a room not inhabited, having a South aspect, the window left open; and due care taken that the air may freely enter, without any reflected gleam of sun-shine, or heat from any wall or building opposite, or too strong a light. When he passes to the Southern Tropic, it may be moved to the Northern side of the house, with the like precautions.

The mercurial thermometers, I have reason to believe, are the most to be depended on; and they have this further advantage, that the ball is generally uncovered, so that every variation of the atmosphere immediately affects the whole mass. Perhaps, two instruments, or

even three, placed side by side, would enable the observer to be as exact as possible, by noting their deviations, and taking the *medium* of all. Fahrenheit's construction, from its simplicity, is more generally approved of, and perhaps more useful, than the other scales. But, whatever instrument is thought most eligible, the graduation ought always to be noticed and prefixed to the diary. A want of this has made many registers unserviceable, in respect to the advantage that might be hoped from a comparison of climates; and dependent on this, the analogy of symptoms and diseases correspondent to the various changes of the atmosphere in different countries. There are no less than 16 or more of these instruments of various inventions; so that a person, ignorant of their graduation, or the method of comparing them one with another, would find himself greatly puzzled in the attempt. In 1740, Dr. George Martine published some very intelligent essays on the subject of Thermometers, and added a plate, exhibiting the graduation of 15 of these instruments in a comparative view; this *Desaguliers* has given (p. 364, vol. II.) and it will be found extremely useful to experimentors.

S E C T XI. B A R O M E T E R.

According to four years observations at *Spanish Town*.

	In one Day.	One Year	Jamaica.	In England,
	Inch.-ioths.	Inch.-ioths.	Inch.-ioths.	Inch.-ioths.
reatest fall on the approach of a gust or } gale of wind from S.W. attended with rain, }		1	8	
General subsidence before } slight showers,	o	3		
Ascent after }				
The same before and after violent rains,	o	6		
Whole range,	3	5	3	2
General station,			9	4
Greatest ascent,			31	8
Lowest fall,			28	0

Doctor Halley observes, that near the Equinoctial there is little or no variation in the height of the barometer. He accounts for it thus; " that in these places there is always an easy gale of wind blowing nearly from the same point; so that, there being no contrary current of air to exhaust or accumulate it, the atmosphere continues much in the same state. However, upon hurricanes, the mercury has subsided very low; but this happens only once in two or three years, and it soon recovers its settled state of about 29 $\frac{1}{2}$ inches, as at Barbadoes." At this island

(last)

(last mentioned) the mercury is rarely known to rise above 30 inches, and its settled state is about 29 $\frac{1}{2}$. Jamaica, lying nearer to the North American continent, and being a much larger island, is more subject to variable winds; and the Norths, which always raise the mercury highest, are far stronger here. The mercury is therefore not so stationary here as in the Caribbee islands, which lie near the Equinoctial. The atmosphere is heavier in its pressure; and would be more salubrious, for this reason, to European constitutions, if the woods were opened. We may ascribe to this pressure of the air, in great measure, that lively flow of spirits which most of the inhabitants enjoy, which may naturally happen wherever the mercury's station is usually near about 30 inches. The variations here are minute, as Doctor Halley has remarked, except upon the approach of stormy weather; and hence the pressure of the atmosphere on the body is generally uniform, and equable, from day to day, or, at least, with very little sensible disparity.

Yet no contemptible advantage may be derived from this instrument even here; where, although the mercurial motions are small, yet they afford certain indications of change in the weather likely to happen in 24 hours. A knowledge therefore deducible from such a prognostic is not without its use to the planter, in directing his operations in the field, with regard to planting or sowing.

Science too may be benefited from its application in a different way.

An accurate measurement seems to be wanted of the height of the different mountains, particularly the various Blue Mountain ridges.

In taking the height of a mountain with the portable barometer, the experimentor is first to remark, at what degree the quicksilver stands at the level of the sea, or (that being too distant) at the foot.

Having ascended to the summit, or as high as he chuses to go, he is then to observe how many inches, and parts of inches, the mercury has subsided.

From variety of experiments it has been supposed, that the mercury subsides one tenth of an inch at every ninety feet of ascent; but it has likewise been proved, that, from the different degrees of density in the air, the higher we ascend, if the mercury falls one tenth of an inch at the first ninety feet of rise, it will not fall the next tenth, till the barometer is carried up ninety-three feet higher; and so the height of every column of air, of the weight of one tenth of an inch of mercury, will vary according to the height of its situation in the atmosphere, each being about

three feet longer than the last. If, therefore, for an height of 1,035 feet, the mercury falls one inch, the different stages of its fall, in proceeding upwards towards the mountain top, will be marked as follows:

Nº. of feet ascent.	Fall of the Mercury, tenths of 1 inch.
90	I
93	I
96	I
99	I
102	I
105	I
108	I
111	I
114	I
117	I
<hr/> 1035	<hr/> $\frac{1}{10}$ ths or 1 inch

It is from such kind of observations that doctor Halley, and others, framed tables, to shew what would be the heights of the mercury in the tube, and the density of the air, at different heights from the earth.

The following two are abridged from Dr. Halley's, as it would be unnecessary, for the purpose of measuring mountains, to carry the calculation further than their greatest known height.

A table shewing the altitudes of a mountain to given heights of the mercury.

Inches. Feet.

30	0
29	915
28	1862
27	2844
26	3863
25	4922
20	10947
15	18715

A table, shewing the height of the mercury, at giving altitudes of a mountain.

Feet.	Inches.	Foot Parts of an Inch.
0	30	0
1000	28	91
2000	27	86
3000	26	85
4000	25	87
5000	24	93
Mile 1 or 5280	24	67
2	20	29
3	16	68
[b] 4	13	72

These tables, it is said, do not perfectly agree with phenomena, yet they are thought to be tolerably accurate; at least sufficiently so for such mensurations where exactness to a few fathoms is not required; and, until better tables are constructed, these may serve to render the work practicable with less trouble and difficulty [c].

The

[b] Chimbaco rao, one of the Cordilleras, is nearly four miles above the level of the sea.

[c] The ingenious Mr. Brydone, who has lately favoured the public with a very entertaining account of mount *Etna*, observes; that *Peclet* (the most exact of all the French academicians) allows

'The general theory of the operation is built on this principle; "That the column of air upon high mountains is much shorter; and, consequently, lighter than that of the plains."

Supposing a hill, such as Snowdon Hill, where the mercury settles at four inches below the mean altitude at the level of the sea, and whose height is about 3,720 feet; the column of air, at such an height, and of one inch diameter, it is supposed, would be found lighter by 14,320 grains, or 29 oz. 6 dwt. 3 scrup. than below.

Hence it follows, that, in such places, the blood, having a load taken from it, will swell and distend the vessels; and, at least, occasion a shortness of breath.

The like dilatation happens to bottled liquors carried to that height; the air contained in the liquor rarefies to the same pitch with the external air, cracks the bottle, and makes it fly into a thousand pieces.

From the like cause, perhaps, sudden changes of weather in this climate, from very dry and hot to very wet, and again to hot and dry, produce a variety of disorders in the human body.

In the year 1761, after very heavy rains, for seven or eight days in May, succeeding dry sultry weather, and followed by a return of dry hot weather, a bad species of fever appeared in Kingston; the first symptoms of which were a sudden vertigo, and deprivation of sight; instant bleeding was found most serviceable; and, if neglected, the disorder

lows 14 toises, or about 90 English feet, to every fall of 1 line of mercury; but he thinks, the allowance usually made, particularly in great elevations, where the air is exceedingly thin and light, is much too small. His conjecture is probably just: and if so, the English mensuration, given in the former tables, may be found more exact than any formed by Cassini, and other foreigners. The following are the elevations of the thermometer and barometer observed by Mr. Brydone in his ascent:

Height of Fahrenheit's Thermometer. Deg.	In. lin.	Height of Barometer.
At Catanea, mid-day, May 26	76	29 8½ Sea-side at Catanea.
Ditto 5 in the morning 27	72	27 8 Piedmonte, in the first region of Etna.
Nicoloſi, mid-day	73	27 1½ Nicoloſi, in the same region.
Spelonca del Capriole, where there was snow (7 at night),	61	26 5½ Cofaggio de Cento Cavalli, second region.
In the same cave, half past 11 at night,	52	24 2 Spelonca del Capriole, same.
Torre del Philojpho, 3 in the morning,	34½	20 5 Torre del Philojpho, third region.
Foot of the crater,	33	20 4½ Foot of the crater.
About half way up the crater,	29	19 6½ Within about 300 yards of the summit.
On the summit, a little before sun-rise,	27	19 4 By supposition at the summit of the mountain.

According to this register, and the former tables, the height of Etna, above the sea's level, should be about 11,630 feet; Mr. Brydone supposes it not to exceed 12000. But, at the former computation, it is upwards of 4000 feet higher, than the highest part of our Blue Mountain Ridge in Jamaica. The thermometer being at 33, or 1 degree above the freezing point, when the barometer was at 20 inches 4½ lines; we may suppose the freezing point to have been at the elevation of near two miles, or about 10,368 feet, in the month of May.

generally

generally proved mortal. The barometer, after being too low during the fall of rain, rose to $31 \frac{4}{5}$. In this case the column of air became suddenly light, and as suddenly became heavy again; the quickness of which transition, doubtless, caused very extraordinary commotions in the blood and juices; for, in rainy weather, the atmosphere near the earth is lighter than at other times; and, in fair or clear windy weather, it is heaviest.

The barometer therefore may have its use, in leading us to prepare, or to account for, distempers of the anomalous class, as well as in directing our choice of situation for dwelling.

They who live in the thin air of high mountains are generally remarked to be persons of quick, lively parts, their blood and spirits of a free loose texture, and their vessels enlarged, so that the brain is supplied with all that is necessary for performing its functions well. Besides, the coolness and elasticity of the air strengthens their fibres; and such places are usually either rocky, or well drained, and free from vapours. But at those heights, where the vapours constantly brood and settle, their fibres, instead of being corroborated, would probably grow flabby; and such perpetual moisture of the air might be productive of dropsical complaints; hence appears the reason, why persons labouring under an incipient dropsy, contracted by residing in a vapourish air, have, upon their removal to some of the dry, sandy *cayes*, which lie off the South coast of this island, recovered very surprisingly and soon.

In Doctor Trapham's time the dropsy was so endemic in Jamaica, that it went by the name of the *country disease*; but as this disorder is not at present very frequent, we may reasonably suppose (among other causes of its decline) that the air of the country is much less moist than formerly it was. From the foregoing observations we may infer,

1. That persons who pass suddenly from a low situation into the air of high mountains, ought (on coming to reside there) to lose a little blood.
2. That such parts or lines of the mountainous range, at which fogs and vapours daily settle, impregnating the air with continual moisture, are the least fit for habitation.
3. That the healthier elevated spots are either such as are above or below this line; of the latter sort are those the island mostly abounds with,

with, *viz.* the lower rocky hills, and mountains, which are not raised sufficiently to be enveloped with such hovering mists.

Nature, as it were, points out these spots for residence, by their multitude; and further recommends them, by the variety of aromatic plants with which they abound.

The richest vales are seen surrounded with rocky eminencies, for the most part unadapted to *profitable* culture, though peculiarly favourable to health.

Those parts of savannah land also, which have a sandy or gravelly soil, and are so much elevated as to have no stagnant water lodging near them, nor subject to be overflowed, and are at such distance from hills as to receive free currents of wind, are remarkably healthful.

I have consequently observed, that they who have been so prudent, or fortunate, to fix their constant habitation on such spots, were always the most healthy and robust; enjoyed lively spirits, keen appetites, and lived to a good old age, exempted from those many infirmities to which the inhabitants of close towns, or of low, rich, damp, and badly ventilated places, are perpetually liable.

Before I quit the subject, it may suggest some curious experiments to observe, that, as all bodies are subject to expand with heat, and be condensed with cold, it follows, that the *specific gravities* of bodies cannot be the same here as in Northern climates; and, of course, that a measure of any fluid here does not contain so much of that fluid, as the same measure would contain in England.

This circumstance would cause a remarkable effect on the shipping which load at this island, or other parts of the West Indies; and they would sink much lower here in the water, than in the Northern latitudes, if Providence had not furnished the ocean with a larger portion of salt; and, hence it has been found, to increase its specific gravity the nearer we approach to the Line, this augmentation of weight commencing about the 30th degree of North latitude [d].

The natural effects produced on other bodies are, that the water of rivers and springs is lighter here, and, *cæteris paribus*, more wholesome than in England; and that spirits, and all other bodies, are propor-

[d] Lowthorp's Abridg'm. Vol. II. p. 297.

tionably expanded, and occupy a larger space. This piece of philosophy I remember to have seen proved by some Negroes, who had observed, that when they went with a cask of rum in a waggon, to market, in the heat of the day, and agitated it as much as possible, by driving the carriage over the roughest parts of the road, the cask, upon delivery to the wharfinger, would appear quite full up to the bung-hole, though they had stolen some bottles-full out of it by the way.

The effect likewise upon mercury deserves to be noted; because it materially concerns barometric observations; for mercury will expand with heat; and since, by this expansion, it must extend the column upwards in the barometric tube, it is therefore probable, that an extraordinary rise of it in very hot dry weather is sometimes owing to this cause, and not to any increased pressure or gravity of the atmosphere.

Hence it appears, that some uncertainty must inevitably attend the motions of this instrument, in all hot countries; for which reason, upon every unusual rise of the mercury, the state of the air, at that time, in respect to heat and dryness, ought carefully to be noted [c].

A regard must also be had to the choice of the instrument; for the tubes of the ordinary, cheap barometers contain so small a quantity of mercury in them, that they are good for nothing: in these small tubes the attraction of cohesion makes the mercury stick to the sides of the glass, so as not to rise and fall regularly, according to the variations in the atmosphere, as may be seen on comparing them with the barometers of larger and better structure.

Thermometers likewise are not free from irregularities, occasioned by the expansion of their liquor, which, consequently, may often indicate a greater degree of heat than is actually present in the air.

The pendulums of clocks and watches, we find, are lengthened from the same cause in this climate, so as sometimes to require raising very high; and hence, till they are rectified, they must continually lose their time. They are also liable to alter their vibrations from the figure of

[c] An ingenious gentleman observed here, that although there was but little or no variation in the rise and fall of the mercury, from the state of the weather, there was a considerable one in the height of the mercury, in the day and night; for it rose every night, and sunk next day, sometimes one division, and at other times only a portion of one. A change which it is difficult to account for, unless by supposing, that the atmosphere being denser at night occasioned a greater pressure, than in its more heated and rarefied state during the day time, even allowing for the usual expansion by the heat.

the earth, which is supposed 31 miles higher at the Æquator, than at the Poles. Hence, in traveling towards the line, it is found that clocks with long pendulums (exclusive of what is allowed for rarefaction by heat) go too slow, as Dr. Halley, Mr. Richer, and other astronomers, observed, who were obliged to shorten the pendulums of their clocks before they could make them keep true time; according to Mr. Richer's experiments, the pendulum, to vibrate seconds *under* the Æquator, must be about one-tenth of an inch shorter than in the Northern latitudes; without which, the clock which it regulates, will lose between two and three minutes a day. The difference caused by the expansion or lengthening the pendulum by heat, has sometimes amounted to about the fortieth part of an inch; which in many vibrations will make a considerable alteration in time. It is necessary, therefore, that both the clocks and watches, intended for use in this climate, should have their pendulums duly adjusted to this variation, and the curvature of the earth; after which, they may be regulated tolerably well by a thermometer, remarking the different states of heat and coolness in the air, at which they appear to vibrate too slow, or too fast.

The experiments made for discovering the expansion of fluids, were tried by comparing the absolute weight of a cubic inch, of several sorts of bodies, in summer and winter in Europe, of which the following table gives the result in regard to a few, which shews the difference to be considerable; and we may reasonably presume, that the same bodies are rarely in the West Indies *less* rarefied, than they appear to have been in Europe by the summer's trial, and that in the hotter months they are much more so.

	Summer.			Winter.		
	oz.	dr.	gr.	oz.	dr.	gr.
Brandy,	o	4	32	o	4	42
Distilled Water,	o	5	8	o	5	11
Spring Water,	o	5	11	o	5	14
River Water,	o	5	10	o	5	13
Spirit of Nitre,	o	6	24	o	6	44
Oil of Vitriol,	o	7	59	o	7	71
Milk,	o	5	20	o	5	25
Mercury,	7	1	66	7	2	14

Proof spirit of any kind weighs seven pounds twelve ounces *per* gallon.

But it has been found, that a cubic inch of good brandy is 10 grains heavier in winter than in summer, as appears by the table; and that 32 gallons of spirits in winter will make 33 in summer. Supposing, therefore, a puncheon of proof rum, containing 110 gallons by measurement, to be bought in Jamaica, and carried to England, and there sold in the winter, it will have shrunk, by contraction occasioned by difference of climate, 3 gallons, and about $\frac{1}{4}$ of a pint. If the prime cost was at 2s. 6d. per gallon currency, the loss to the buyer is 7s. 7 $\frac{3}{4}$ d.; and on 10 puncheons, 3l. 16s. 5 $\frac{1}{2}$ d.; and on 100 puncheons, 38l. 4s. 7d. Hence it has been rightly judged more profitable, to buy spirits in winter, or cold weather, and sell them in hot.

The cubic inch of proof spirit, according to the English hydrostatical table,	Troy weight.	Avoirdup.
weighs — —	p. wt. gr.	oz. dr.

9 19.73 o 8.62

S E C T. XII.

S E A - W A T E R, &c.

The sea-water, being more saturated with salt in this climate than in the Northern Zones, exhales less, and loses less of its weight. Hence, not only the atmosphere resting on it is less foggy, and therefore less incommodious to the inhabitants bordering upon the coasts, but it is thereby more effectually preserved from putrefying, and loading the air with noxious *effluvia*, which, combined with the heat, would become highly pestilential.

The water of the rivers here, and frequently that of the sea, is in the early part of the morning warm to the feel, and cool in the evening. The truth is, the senses are deceived in this experiment, and it happens from the different state of the atmosphere at those times. Early in the morning the air is cooler than the water, the warmth which the latter has acquired in the course of the day, being partly retained by means of the sand or mud at the bottom; but in the evening, the atmosphere having been heated to a greater degree than the water, and not yet much divested of its warmth, either by the sun's absence, or the land wind, is actually warmer than the water. In the morning, therefore, the rivers are frequently seen to exhale a slight mist or steam, especially when the air is more than usually cool.

The

The water of the brackish rivers on the coast yields about 1 drachm of sea salt from 2 quarts, or 1 ounce from 4 gallons.

I have no measurement of the quantity contained in a gallon of our sea-water; but it would be curious to try the experiment in the hotter months, and compare with that of the British Channel, whose produce has been computed at $5\frac{1}{2}$ ounces *per* gallon.

S E C T. XIII.

Tides, Currents, and Magnetic Variations.

The centrifugal force of the earth, arising from its diurnal motion, is computed by Sir Isaac Newton, to raise the water at the \AA quator to the height of 85,472 feet above the water at the Poles; and the united force of the sun and moon raises the ocean $10\frac{1}{2}$ feet; consequently the attraction or gravitation must be greatest in this part, from the greater proximity of these two bodies. If the moon were constituted at the \AA quinoctial, there would be always high water under that circle, and low water at the Poles; and, therefore, the nearer the moon approaches to the \AA quinoctial, the less is the agitation of ocean in that part of the globe. That the tides may have their full motion, the ocean in which they are produced ought to be extended, from East to West, a quarter of the great circle of the earth at least; because the places where the moon raises most, or most depresses the water, are at that distance from one another; hence it appears, that it is only in the great oceans, that such tides can be produced; and why in the large Pacific ocean they exceed those in the Atlantic ocean; why the tides are not so great in the Torrid Zone, where the ocean is narrowed, as in the Temperate Zones on either side; and why they are so small at islands that are far distant from continental shores. As the tides pass over shoals, and run through straits and bays of the sea, their motion becomes various, and their height depends on so many circumstances, that it is impossible they should be regular.

Thus the tide at Bermudas sets variously, and does not flow above 5 feet; and that only when the sun is in the Southern Tropic; at other times, not above 3 feet.

At Jamaica, it rarely flows (according to my observation) above 18 inches or 2 feet at most; though the violence of sea breezes, and Norths,

will sometimes create a small difference; and in rivers which fall into deep bays on the South side, the flux and reflux rarely exceed one foot. The influence of the before-mentioned bodies upon the Tropical seas, is doubtless one cause of those prodigious currents observed among all these islands situated within them. These currents are said to be variable, as well in their times of setting in, as their direction; however, a more certain knowledge of their motions and doctrine, which can only be the result of very careful and regular observation, seems desireable, for the sake of navigation. The currents on the South coast of Jamaica usually set during the reign of the regular trade wind, to the N. W., into the gulph of Mexico, and circulate to the N. through the Florida channel; while the Norths prevail, they tend rather S. Westerly.

The continual torrent which sweeps through the gulph of Florida, and along the North American coast, with such strength and rapidity, as even to have been remarked so high as the isle Sable, in North latitude $44^{\circ} 30'$, is attributed to a certain permanent cause; and, if the theory be right, can seldom vary much in its direction from the influence of winds, or, at least, only to some little depth beneath the surface.

Casting our eyes over the map of this quarter of the globe, we observe a great multitude of islands, rocks, and cayes, which form a semicircular barrier, from the N. W. extremity of the Bahamas, adjacent to North America, quite to the island of Trinidad, nigh to the Southern part of the continent; ranging through an extent of fifteen degrees of latitude. The passage of the water from the great Atlantic ocean into the Caribbean sea, and Bay of Mexico, is, therefore, considerably obstructed; and being incessantly urged on to the Westward, and N. W., during great part of the year, by the trade, or S. E. and Easterly winds, and by the pressure or gravitation of its own vast body near the $\text{\text{A}}\text{E}quator$, it ought to cause strong currents in the like direction between several of the windward Antilles, or Carribbee islands; in a similar manner as the stream of a river, whose motion is accelerated between the arches of a bridge. This current must diminish in violence, when the water finds ample room to expand, and diffuse itself freely on every side, as it does after its arrival in the Caribbean sea; but it is again impeded, at its entrance into the Bay of Mexico, by the two Capes of St. Antonio on the S. W. end of Cuba, and Catoche on the opposite continent; which project to meet each other, like two moles or lunettes at the mouth of a sea port; and, approaching

proaching so near as about fifty leagues, necessarily contract the passage, and occasion a very swift current to the Westward through this strait. It is accordingly observed, that a prodigious current sets, with a constant strong stream to the Westward, upon all the Southern parts of the Mexican Bay, so far as the Strand of Vera Cruz; and, being then deflected by the curved shape of the land, veers round to the Eastward along the opposite shore, endeavouring to pass out again where it meets with least resistance; and making its progress by the W. end of Cuba to the Northward, till it disembogues by the Florida gulph into the Atlantic ocean; the strong barracade of the Bahama isles and shoals, together with a counter current proceeding from the Bahama strait, seeming to guide its efflux that way. The natural course of the water, on the East Florida coast, should be supposed from West to East; but the current here has been observed to be often irregular. When it runs with greatest impetuosity, the Bahama isles and shoals against which it sets, may possibly occasion an eddy; and the reverberated water may turn back again along the Florida shore to the Westward, or S. W., towards the Martyres. At other times, the rivers, which discharge in great abundance from the lakes and swamps in that country, may produce a like effect. Mariners have remarked, that within the gulph, the current often sets Westerly, or S. W., on the Florida side, along shore, and N. E. and N. off the Cuba and Bahama sides; and, in order to avoid those dangerous reefs which environ the Florida coast, they endeavour to get well in with the land about the Havannah; make an allowance of four or five points in the compass for the current; and steer, as near as possible, for the Bahama side. The regular trade blows at Cuba from March till October or November; during this space, the flux of water continues with little variation, from the E. and S. E. into the Bay of Mexico, and out again, to the Northward through the Florida gulph. In the other months, the wind often blows violently from the N., or N. W., into the Northern mouth of the gulph; and, meeting the current in opposition, raises a chopping, dangerous sea. When this happens, the efflux of the water might, in some degree, (it would be imagined) be retarded; at least, to a certain depth, although below that depth it might be unaffected, and persist to run in a direction contrary to the wind; but there is reason for believing, that the current runs with unusual velocity at such times, aided by the drift of water from the Florida side; where it is remarked, that Northerly winds almost

almost empty all the bays. The same winds may act also upon the Bay of Mexico, and in some measure obstruct the regular influx between Cape Antonio and Cape Catoche; whence it may happen, that, a less supply than at other times flowing into the gulph, the channel there may be lowered, and consequently cause a drain from the Florida bays to replenish it [f].

The difficulty of stemming this current at any season of the year, is the reason, that all ships bound for Jamaica, as well from the Northern colonies, as from Europe, run into the latitude of 17° , or $17^{\circ} 30'$ North, to fall in with the trade wind, which sets with the current, and favours their passage. It is no less inconvenient for them to attempt a course to the island by the windward passage, though some few French, and other light ships, have gone to Hispaniola this way, between the Caicoes, or Turk's Islands; for the current almost uniformly sets to Northward through that passage, and is therefore, in general, favourable only to vessels homeward bound from Jamaica to Europe, or North America. The ships which load towards the Western end of Jamaica, find great delay when they are deep in the water, and homeward bound, in beating up against both the trade wind and current; and, for the most part, bear away for the gulph, having then both of them in their favour. The ships, therefore, which load at the Eastern parts, have an advantage in this respect; for after stretching across to the N. W. land of Hispaniola, they haul through the windward passage, with a current to help them, and, by this means, shorten their navigation considerably. The larger, or main currents, seem to be pretty regular; but the variation in the smaller ones often disconcerts the expertest pilots, and requires a course of attentive observation, to determine the probable causes of their shifting at different times of the year. Whether owing to the position of the globe, to the tides, the shifting of the trade wind, the angle of incidence at which these currents strike the different head lands, islands, and coasts, an accidental drain, or an accumulation of water at some small distance, or other cause; and in what manner the direction these currents take may usually correspond with the respective cause.

[f] It has been observed, that the tide runs unusually high upon the South coast of Jamaica, when the Norths blow with greatest violence; this is undoubtedly occasioned by the obstruction then given to the current setting towards the Bay of Mexico, by which means, the water is repelled, and accumulated upon the coasts of this island.

The

The range of the more steady currents in these seas, according to the testimony of navigators, may be thus stated, for a general rule.

Direction.

In the Strait between Cape Nicolas (Hispaniola) and Cape		
Mayze (Cuba),	—	N. E.
E. end of Jamaica, and Cape Tiburon		
(Hispaniola), —	—	N. by E.
N. side of Jamaica, and S. side of Cuba,	W. by N.	
Old Bahama Channel, N. side of Cuba,	W. N. W.	
Cape Catoche, and Cape Antonio,	W.	
Off the Havannah,	—	E.
Off the Colorados,	—	E. by N.
Gulph Channel between Bahama Isles		
and East Florida,	—	N.
Coast of East Florida within the		
gulph, sometimes	—	S. W.
Irregular. Caicos or Turk's Islands, (off N. E.)		
part of Hispaniola,) sometimes	Westerly.	

The tides are equally as variable and irregular as the smaller currents, in their periods of flux and reflux ; but seldom flow more than three feet, either at the North side of the Bay of Mexico, at the West end of Cuba, or at St. Augustine, the Northern extremity of East Florida.

We observe here, four remarkable provisions for keeping the ocean between the Tropics in constant motion, that its waters may not, by stagnation and corruption, prove destructive to animal life ; they are, the trade winds, the greater saltiness of the water, tides, and currents. The greater advantage of currents to perform the apparent destination of tides in this climate, where the ebb and flow is subject to so much irregularity, and is, in general, so inconsiderable, arises from hence ; that if the sea should recede here from the shore to a great distance, during several hours, as in the Northern countries, leaving an extensive tract of mud and filth, exposed to the exhalation of the sun, and action of the wind, the stench produced from them would be insupportable to human inhabitants. A moderate North wind, now and then, sets the water somewhat higher upon the North coasts of this island, and forces it to recede proportionably from the South shores ; but the coolness and drying quality of that wind, as well as its setting off the South shore, correct or diffi-

pate any putrid exhalations, so that they cannot annoy the inhabitants of those parts.

Thus has the Almighty not left this portion of the globe destitute of necessary preservatives against the inclemency of the climate; so that they, who act here agreeably to the dictates of right reason, may enjoy every gratification of health and felicity in a reasonable extent, without being afflicted with more than their just proportion of natural evils, in common with the rest of mankind.

And there is no doubt, but that the same Wise Being, who contrived this constant agitation of the sea, to preserve its vast collection of waters in sufficient purity, has likewise in the Æquatorial climates, designed the extraordinary ebb and flood of the atmosphere, and its vast elevation above the air of the Poles, with the like good view of securing the freshness and brisk temper of this fluid so essential to life, and keeping it, by a perpetual circulation, from deadness and flinching.

The variations of the magnetic needle were observed by Dr. Halley, to be very small near the Æquator. I have seen no account of them for this island, that can be relied upon; but, if observations should be faithfully made here, they would probably confirm his opinion.

According to Mountaine's chart, constructed in the year 1700, from Dr. Halley's tables, the variation at Port Royal then was about $6^{\circ} 30'$ E. Some late observations make it about $6^{\circ} 0'$ E. But, as in most parts of the world it is found to be continually either increasing or decreasing, so we may reasonably conclude, that it may have altered in both respects very much during this long interval that has passed since the construction of the chart. For want of a register of annual observations given to the public, we have no *data* whereby to determine either what the whole variation amounts to in a series of years, or whether it is at this time on the increase or decrease. A correct observation might be made here, by two stations, one at Port Royal point, the other at Long Bay, or Green Island harbour at the West end, in the month of December, at which time the sun's amplitude, at rising and setting, may be taken to a degree of great exactness, from his having then the greatest Southern declination, and not being intercepted by the mountains, from observers placed at those convenient stations.

In 1682, the variation at Martinique (lat. $14^{\circ} 30'$ N.) was found to be 4 deg. 10 m. East: in the year 1704, it was 6 deg. 10 m. E. which makes

makes 2 degrees in twenty-one years. At La Vera Cruz ($19^{\circ} 12' N.$ lat. or about a third of a degree more to the North than Jamaica) in the year 1727, it was only $2^{\circ} 15' E.$ In 1746 the variation at Cape Francois ($19^{\circ} 45' N.$ lat.) was found to be $5^{\circ} 15' E.$ Dr. Halley conjectured three lines of no-variation, or lines where the needle does not deviate in the least from its true Northern point. The Eastern or Atlantic line takes place in N. lat. 33, and increases very slow, as appears from the preceding examples. The origin of these magnetic powers, as well as the cause of their variations, remains hitherto a mystery; though, without doubt, they are contrived by the same infinitely Wise Being, to answer some very important purposes in the mechanism, or motions, of this globe; but the ascertaining these variations with precision in the different meridians, as it is attended with no great difficulty, so it is extremely interesting to correct navigation, and the right projection of charts and maps [g].

[g] A regular attention to the course of this variation is of the utmost importance also to landed property in this island, in regard to the true fixing of boundaries; their uncertainty having been a constant source of dispute and litigation ever since the island was first settled. Formerly most surveys were merely imaginary, so that it is but of late years that our surveyors have been constrained by mere dint of penal laws to make actual surveys; if we suppose an actual survey made, and the lines duly marked on earth, or on trees, in order for a patent pursuant to the diagram returned, and that a dispute, concerning the true fixings on all sides, should happen five or six years afterwards, it is highly probable, that, on the fairest re-survey, a most material difference would be found; for, if the first surveyor has not allowed for the variation of the needle, but has taken the magnetic meridian for his guide; or if he has made an allowance, but the subsequent surveyor should not do the like, a considerable alteration may be made to the boundary in the course of a few years, and the site of the plat varied, both with respect to its Eastern and Western lines. This effect has undoubtedly happened in a multitude of examples, since few surveyors here advert to it, or make any specification of it, either on the original diagram, or on a re-survey.

This is sufficient to shew, what an equivocal use we make here of the term *boundary*, which, instead of being rendered so uncertain by the omission of surveyors, the decay or destruction of marked trees, and other causes, ought to be perfectly distinct and obvious, so as to be ascertained upon the view only.

It is needless to add, the many hardships which may spring from this irregularity, to the vexation and disturbance of the poorer settlers, who are ill able to contest their location with a grasping, litigious, and opulent neighbour.

For putting stop to such injustice, the legislature cannot interpose too strictly; and, next to regulating the qualifications, duties, and proceedings, of every sworn surveyor belonging to the island, it might, perhaps, be attended with very happy effects, if every proprietor of land, or his agent, should be obliged by law, to make an annual *perambulation* round his lines, on a certain day to be fixed by the law, in that season of the year which has usually been experienced the dryest, and most convenient for the purpose, in each respective parish. By this easy method, the marks might be constantly preserved or renewed, as they are in England, where this is the customary practice for ascertaining the bounds of parishes, manors, &c. Re-surveys would become unnecessary, and many expensive law-suits be prevented.

Justly, therefore, may we conclude with the poet;

" In human works, tho' labour'd on with pain,
 " A thousand movements scarce one purpose gain ;
 " In God's, one single can its end produce ;
 " Yet serves to second too some other use."

Pope's Essay on Man, Ep. I.

C H A P. VIII.

A Synopsis of Vegetable and other Productions of this Island, proper for Exportation, or Home Use and Consumption. Of Exotics, cultivable for one or other of these Purposes; and of its noxious and useful Animals, &c.

I. SUGAR CANE. — *Aruno Saccifera.*

THE manufactures produced from this valuable plant having already been discussed, it remains only to say, that the proper manner of its cultivation in different soils, and the whole process of the manufacture of its expressed juice, would lead into too extensive a field. The cultivation of it is now, in general, well understood in this island, and the manufacture daily improving; a knowledge of them, perhaps, as things are at present circumstanced, is best acquired by practice and experience, since we have no rules as yet laid down, suitable to every peculiarity of situation; nor history of soils and manures, &c. for the several districts of the island: such a work might be extremely useful, and indeed is much wanted.

The general proportions, with respect to the juice of this plant, and its manufactures, are rated as follows:

Cane Juice. Muscovado.	Refined Sugar.	Melasses.	Rum.	Hds.	Punch.
Gallons.	lb. wt.	Single gall.	gall. qts. pints.	gall. qts. pints.	at 15 ewt. at 110 gall.
		lb. wt.	lb. wt.		
100	100	33	14	12 2	0 0 1
1500	1500	496	210	187 2	4 62 2
150,000	150,000	49,600	21,000	18,750	6250 100 57

The remainder of the juice consists of water, scum, and dregs, from which rum is also distilled. A portion of the skimmings is given to mules and hogs on most estates; and, as the proportions must vary with the quality of the soil, the goodness, or impoverished state of the land, the quantity of rain, and other circumstances, it is impossible to fix them to any unerring standard. Many reckon 200 gallons of rum to 3 hogsheads of sugar, and this may be admitted, where skimmings and melasses are both

both of them applied : in general, it may be computed, that only about one-fourth part of the ingredients [b], used in the distillation of rum, consists of melasses. In this case, 100 lb. wt. of muscovado is proportioned to 1 gallon of melasses, or 4 gallons of rum [i]; i. e. one puncheon of 112 gallons to two hogsheads of 1400 lb. each, nett weight. There is a great waste of this syrup in various ways; in the curing-house, the cisterns, &c. and much is left in the sugar hogsheads, undrained. The waste in a hogshead of sugar on the voyage home is very frequently 100 lb. wt., which chiefly (if not entirely) is melasses; from ill-cured sugars the drain is still greater, amounting sometimes to one-third of the whole weight shipped. 100 lb. may, therefore, be called the average *per* hogshead. This, on 1000 hogsheads, is 100,000 lb., which probably might have yielded 8750 puncheons of rum, worth upwards of 12,000 £. sterling.

Sugar is of the same nature as honey; it yields the same principles, and in the same proportions; it is a native vegetable soap, containing an oil miscible with water, by means of a salino-acid substance. Lime readily unites with all acids, but probably loses all its caustic quality by the union, and by imbibing a large quantity of factitious air in the process.

2. INDIGO. — *Indigofera*.

There are three species of it, the common, the *guatimala*, and the wild. The first yields more of the dye than the others, but is subject to more mischances in the culture. The second is better than the first; but the wild indigo is preferable to either; its leaves are smaller, the stem more woody, and it grows sometimes 8 or 10 feet high. It is found in great plenty in the river courses and savannahs on the South side of Jamaica, particularly about the Rio Minho in Clarendon, near the banks of which it was formerly cultivated, as appears from the ruins of several vats still remaining. It is much hardier than the other species, and the dye extracted from it is of a beautiful copperish cast, and close grain. As it has a tap root, it requires a deep soil, and thrives best in what is free and rich, in a warm situation, where it is frequently refreshed with rain. It may be planted at any season of the year. The land is first hoed in little strait trenches, about two inches deep, and eighteen inches asunder; the seed is sown in these trenches not very thick, and then lightly covered in with earth. A bushel of seed is allowed for six to eight acres. If the

[b] The proportions may be found to vary from one-fourth to one-sixteenth, according to the yielding of the canes, and the pleasure of the distillers.

[i] It was formerly computed in Barbadoes, that 100 lb. wt. of muscovado would yield 5 gallons of rum; but, I think, this allowance of spirit too large, if it is of good proof, or highly rectified.

weather proves warm and serene, the plant will appear above ground in a few days, and, with moderate showers to bring it forward, will be fit to cut in six or seven weeks. The ground must be hoed and cleaned as soon as the young plants appear to loosen the soil about them, and facilitate their growth. In some parts, they do not come to perfection under two or three months; and are generally observed to answer best when cut in full blossom, as the leaves are then thick, and fullest of juice. The French distinguish the time by squeezing a plant in the hand; and, if the leaf cracks, they suppose it to have acquired the due maturity. The vats for manufacturing it are generally three, placed in a regular flight, like steps; one ascending to the other. The highest, which is the largest, is called the steeper, and the dimensions about fifteen feet square, and two feet and an half, in depth. This opens by one or two holes, made through a junk of hard timber (built in the front-wall towards the bottom) into the second, which is of greater depth; and the second opens in the like manner into the third, or smallest. These latter are called batteries, or beaters; and some make them both of equal size, which, in proportion to the dimensions above given, ought to be twelve feet length, by ten breadth, and four and an half depth in the clear. They are built with masonry, and lined with a strong terrass, like the steeper, or of close-grained plank (not cedar) of two inches and an half thick, well fastened to the frame with large spike-nails, and caulked, to prevent leaking. Vats of these given dimensions are proper for about seven acres of the plant.

When every thing is in readiness, the plant is cut, and regularly laid in the steeper, with the stalk upwards (which hastens the fermentation), till this vat is three-parts full. A number of rails are then laid the whole length of the vat, at the distance of about eighteen inches from one another: these are strongly wedged down, by means of timbers, which are made to press upon them, to prevent the plants from buoying up when water is put upon them. The softest water answers best for the purpose; and as much is let in as the weed will imbibe, covering it with a surface of four or five inches. In this state it is left to ferment. In twenty-four hours it grows so hot, that no one can bear the hand in it; and, if the process goes on well, it will bubble like water in a pot upon the fire and

and shew a tinge of very dusky blue. Great nicety is required, as well in not suffering the tender tops to run into putrefaction, which might spoil the whole, as in drawing off the water at the critical moment; for, if it is drawn two hours too soon, great part of the pulp will be lost; and, if the fermentation is kept on as much too long, the labour will be lost.

To avoid these disasters, a handful of the weed is frequently taken out; and, when the tops are observed to become very tender and pale, and the stronger leaves to change their colour to a less lively pale, this is known to be the proper point; and the liquor must be speedily drawn off into the second vat, there to be thoroughly beaten and incorporated [b]; to perform which operation, a variety of machines have been invented. In Jamaica, they formerly suffered the liquor to stand twenty-four hours in this second vat, and then churned it for three or four hours with paddles, or pieces of board, drilled full of holes, and fastened on the end of long poles. The French made use of a kind of buckets, without any bottom, fixed to poles, which rested on pivots, and were pulled up and let fall again alternately with a jerk. But far more convenient machines are now constructed, with a cog-wheel, which moves the levers, or beaters, with greater regularity, and saves the labour of many Negroes; the whole being kept in motion with a single horse, or mule; and one of them will perform more work in half an hour, than six Negroes are able to do in six hours; so that they fully answer the expence of erecting them, and frequently reduce an imperfect tincture to grain, which could hardly otherwise be brought about. When the liquor has, by means of such a machine, or any other method, been well churned for the space of fifteen or twenty minutes, a little of it being taken up in a plate will appear curdled, or as if full of a small grain. A quantity of clear lime-water, always kept ready for the occasion,

[k] Some have used the following simple contrivance on this occasion with success. A small square stick, painted white, and graduated with black lines, of six or eight to an inch (the inches being numerically marked from the bottom), is fixed conveniently within the steamer in a perpendicular position. This is carefully observed, from time to time, to note with exactness the highest rise of the scum; and immediately, when it begins to subside, the plug is to be drawn out, and the liquor discharged into the next vat. A similar method is practised in Egypt, to discover the increase or fall of the Nile by a graduated column, called the *moltius*; from whence perhaps the hint was taken.

is then gradually let in, to augment and precipitate the *fæcula*; the stirring and beating the indigo water being still continued, and the colour and appearance of the *fæcula* being carefully examined from time to time, as the work advances; for the grain passes, by degrees, from a greenish cast to a fine blue, which is the proper colour when the liquor has been sufficiently worked. Too small an agitation will leave the grain coarse and green; whilst too long continued a beating causes it to turn almost black. By examining it therefore repeatedly during the process in a silver cup, or a soup-plate, the operator may soon learn to distinguish whether to have his indigo of a deep, copperish blue, or of a paler complexion, as he chuses. When the liquor wherein the *fæcula* swim is quite clear, he may be satisfied it has lime-water enough. The lime-water must be perfectly clean, or otherwise the indigo will be very much speckled; nor should too large a quantity of it be let in, which would render the indigo too hard, and of a greyish cast. When the indigo water has acquired a strong, purple colour, and the grain has become scarcely perceptible, it must be left to settle, which it will do in eight or ten hours. The clear water is then very gently drawn off, out of the beating-vat, through the plug-holes, fixed for that purpose a few inches above the floor, or bottom; and the sediment remains behind, which is carefully strained through a horse-hair sieve, to render the indigo perfectly clean, and then put into bags of osnabrig, or other coarse linen, eighteen inches long, and twelve wide, which are suspended for about five or six hours in the shade, to drain out the water. The mouths of the bags are then well fastened, and put into a press, to be entirely freed from any remains of water, which would hurt the quality of the dye. The press is a box of five feet in length, two and a half width, and two depth, having holes at one end, to let off the drained water. In this box the bags are piled one upon another, until it is quite full; a plank, fitted just to go into it, is laid at top, and loaded with a sufficient number of weights, which, by a gradual, constant pressure, entirely squeeze out the water, and the indigo becomes a fine stiff paste. It is then taken out of the bags, spread upon a plank, and cut into squares of two inches each, which are ranged, under cover, in a free air, without exposure to the sun, which would be very hurtful to the colour of the dye. Whilst it is

in the drying house, it should be turned three or four times a day to prevent its rotting. The flies must likewise be driven from it. Care is taken to have it thoroughly dry before it is packed, because, if it is put damp into the casks for exportation, and headed up, it will sweat, and inevitably be spoiled. Good, marketable indigo should be of a fine, copperish, blue colour, deep, and shining, with a smooth grain. It should break easily, swim in water, and burn very freely, leaving some white cinders behind.

The faults in indigo generally arise, first, from too long a putrefaction, which gives it a dirty hue; so that it looks like black mould, or mud: secondly, from too little beating; and then it has a coarse grain, and a greenish colour: thirdly, from too much beating, which always imbues it with a black cast: fourthly, from a mixture of the particles of lime, when the lime-water has not been sufficiently depurated, or when too large a quantity of this water has been let in, which renders it greyish, and hard: fifthly, for want of lime-water, or when none is used; by which neglect, it never comes to a due granulation, nor settles well, and deposits only an inconsiderable part of the substance. From all which it appears, that no small degree of skill and attention are required in conducting and perfecting this manufacture. And hence we may easily conceive, how the right management of it came to be lost in Jamaica, after the planters had for many years disused it; for much depends on the knowledge gained by a long course of experience and observation, to direct the exact degree of fermentation, of beating, and application of the lime-temper, as well as the method of curing and drying for the market.

This valuable commodity is the principal ingredient known for dyeing a fine blue; and no part of the world affords better soil for the culture of Indigo, than the interior parts of Jamaica. Add to which, that it is not bulky in the carriage: and that a few barrels, of small size, such as a mule may convey through the most difficult roads, will contain a quantity of it of great value. Fifteen Negroes are esteemed sufficient to manage and attend twenty acres; and twenty-five Negroes are allowed to fifty. Four Negroes are therefore about equal to five acres; which proves that it may be entered upon by men of exceedingly small capitals. And it is also certain, that they will have time for doing other occasional work through the year.

One acre of rich soil, well planted, will, with good seasons and proper management, yield two hundred pounds weight [i], in twelve months; for this plant gives ratoons, or re-produces, affording four or five crops in a year; but must be re-planted afterwards. One Negroe's load, of good plants, will produce one pound weight of good indigo; and, supposing a mule-load six times as much, the latter will be equal to six pounds weight. A planter, possessed of four Negroes, and two mules, with five acres in this cultivation, may therefore be allowed, by prudent management, to make one thousand pounds weight *per annum*; which, at 6*s.* *per* pound sterling, is worth 300*l.*

About the year 1620, the trade for indigo stood thus. Three hundred and fifty thousand pounds weight was spent in a year in Europe; which, at 4*s.* 6*d.* *per* pound at Aleppo, cost 75,833*l.* 6*s.* 8*d.*; at 1*s.* 2*d.* in the East-Indies, cost 20,416*l.* 12*s.* 4*d.*. In later times, Great-Britain and Ireland have consumed eight hundred thousand pounds weight and upwards *per annum*; and were computed to pay France 200,000*l.* annually for what they bought from her. Jamaica once furnished a large supply; but, the tax of 3*s.* 6*d.* *per* pound being injudiciously imposed by parliament, the planters were obliged to drop it, and went upon other commodities. In consequence, until the planters of South-Carolina undertook this article, the French islands (and principally Hispaniola) supplied not only Great-Britain, but the greater part of Europe. About 1747, the Carolinians remitted about two hundred thousand pounds weight to Britain; which sold well, though of a quality inferior to the French: but they have since improved it so, as to be nearly equal. Such were the effects of this high duty; which lost the nation many thousand pounds yearly, and extirpated indigo from Jamaica, to the ruin of several industrious families. A wiser parliament, after the manufacture began to thrive in Carolina, instead of laying on duties to prohibit, granted a bounty of six-pence *per* pound weight on all indigo raised in the American colonies, and imported into Great-Britain di-

[i] Thirty to eighty pounds weight is allowed for tolerable yielding in South-Carolina. But it is to be observed, that these lands are poor in comparison with the fresh-cleared wood-land of Jamaica, which requires to be exhausted by this, or some other vegetable of an impoverishing nature, before it will make sugar; and for such soils two hundred pounds weight will not appear at all exaggerated; and fifty pounds weight *per* acre, for the medium produce of indifferent soils.

rectly from the place of growth. The encouragement was politic; yet this article does not seem as yet to be cultivated in our colonies to such extent as to furnish the home-demand; for the importation of French indigo is still permitted. Whence it seems, that, for want of employing more of our lands in this article, the market for sugar will be glutted, and that for indigo not sufficiently stocked.

In 1672, Jamaica had sixty indigo-works, chiefly in Vere, which produced fifty thousand pounds weight *per annum*. If, therefore, it had not met with so fatal a check, we may judge, from this flourishing state of it at so early a period, that, in the course of twenty or thirty years, it would have yielded five or six times as much, and gone on increasing, in proportion to the home-demand, to the present hour; by which the nation might have saved some millions of money. At present it is cultivated here by about twenty different settlers, most of whom reside in the parish of St. Thomas in the East. The *medium* produce, in Jamaica, of one cutting is fifty pounds weight *per acre*. Few, who have cultivated it here in the lowlands of late years, gained more than two cuttings, the first in July, the second in August, for want of seasons. In the wet, rich lands of the interior parts, it is probable, four or five cuttings a year might be got, as in Hispaniola; where the French cultivate it on fresh wood-lands, to sterilize and prepare them for sugar, repeating the cut every six weeks, five times, or even oftener, in the year. And this kind of soil seems the best-adapted, as it unquestionably produces an indigo of the best quality, and worth several shillings *per pound* weight more than what is made from poorer soils, or in situations which have not seasonable rains. Hence, it will not succeed well in the lower savannah lands of Jamaica, whose staple is rich enough, but not sufficiently watered.

3. COFFEE. — *Coffea*.

This shrub, it is needless to mention, was originally brought from Arabia Felix, where it is cultivated, between the hills, in a dry soil, and watered frequently by artificial channels from rivers, cut on purpose. It grows luxuriantly in all the inland parts of Jamaica; which are therefore, with great reason, in general, thought too rich and wet for it. The drier the soil, and warmer the situation is, the better will be the berries; they will be smaller, and have less pulp:

and this is the sort which will gain the preference at market, from the superior excellence of its flavour. The South-side parts of the island produce a much better-flavoured coffee than the North-side. The berries of the latter and midland-parts are large, and have a full pulp, which requires a long time to dry; and the atmosphere and weather of these districts are too moist for the purpose: so that the coffee, brought from thence, is frequently covered with a degree of mouldiness, and contracts a musty, disagreeable smell and taste. The larger, therefore, and more succulent the berries are, the worse will be their flavour. The best way of raising them is from the seed; for the young plants do not take root well, nor thrive, in the lowlands, if they have been brought from the mountains: but, if raised in a nursery in the lowlands from seed, they may be transplanted with success during the rainy seasons, or when the ground is thoroughly moistened. The seeds, or berries, for this purpose, should be set immediately after their being gathered from the tree; otherwise they are apt to fail. When the plants are about five or six inches high, and grow double (or two together), they should be carefully separated; which is done by drawing one or both, and planting them in separate beds, without injuring the fibres of the roots, or exposing them too long to the air, which would probably kill the plants.

The berry ripens from August to October, blackens in November, and is fit to gather in December; but it ought never to be gathered until the pulp is exhaled, and the coat suffered to become thoroughly dry and shriveled; so that they appear ready to drop off themselves, and actually fall off upon a slight touch. I have always experienced, that the best-flavoured coffee was collected from under the trees, where it had recently fallen, quite dry, black, and shriveled. Wherever it is cultivated, it ought to be planted at distances suitable to its growth; for, in the lowlands, it rarely exceeds five feet in height; but, in the mountains, it rises to ten feet, or more. The distance therefore at which they are set from each other ought to equal the height at which they usually grow in these parts respectively. The produce of a good tree is from one pound and a half to two pound weight.

The mountain coffee might be improved by sending the berries, when gathered, to the lowlands, where the heat is greater, and air

more dry, to be prepared for the market; instead of keeping them involved in a clammy juice, which will not pass off freely in a damp atmosphere, but corrupts and hurts the seed. The proprietors of extensive walks should provide themselves with a large barbacue, or platform, terrassed or planked, to finish the drying of the seed; and, if it was contrived under a roof, it would be more eligible than the common method of laying them open to the weather, as the quantity spread over a large platform cannot be easily rescued from a sudden shower. A drying house therefore, with one or more floors, which would admit a free current of air, and exclude the rain and sunshine, might be most proper. After the berries are thoroughly dried, they are cleared of their coat or husk. This was formerly performed in Jamaica by pounding them in large mortars; a laborious and very improper method, as, by the violent and successive blows of the pestle, they were frequently contused, and broke in pieces.

The Arabians, after having dried their coffee sufficiently upon mats, spread it on an even floor, and break off the husk by passing a heavy wooden roller to and fro upon it; they then winnow and cleanse it, and expose it to the air for some days, to give it a more perfect drying, without which it would be apt to heat, and so lose its flavour. The practice now used in Jamaica, since it has come into more general cultivation, is similar to the Arabian; the husk being taken off by machines turned by mules. Wooden rollers are preferable either to stone or iron; for the stone is subject to deposite a grit, and the iron a rust: and the large timbers of Jamaica are sufficiently ponderous. The advantages of the roller are the dispatch of work, and equality of pressure; both which contribute to render this article more fit for market, as well as more profitable. And the advantages of delaying to gather the berries, till they are dry and shriveled, are, that the husks may be taken off with the utmost facility, and the berries be impregnated with the best flavour [k].

The great fault of the West-India coffee is the want of flavour, or having a disagreeable one. This may be attributed to several causes.

1. The growing in too moist a soil; which (though it always increases the size of fruit and vegetables, yet) greatly depreciates their quality.

[k] The most approved engines, now used in this island, were invented by the ingenious Mr. Latham, and are capable of cleaning one hundred hogheads in a day.

2. Gathering the berries too soon. Some planters gather them while they are red, and hence find the utmost difficulty in extricating the husk. At this time, the berries are much larger, and weigh heavier, than those which are permitted to ripen perfectly on trees; for, when they are ripe, the pulp is discharged, and they are lighter, as well as smaller, than before.

3. Some error in the drying of them when gathered, which must be constantly attended to; for they cannot be too much exposed to the air in the day-time; but they must be, every evening, removed under cover, and carefully screened from dews and rain. Nor should they be placed near any sort of liquid or moisture; for these berries are very apt to imbibe moisture, and the flavour of any liquid near them; so that, even if it is pure water, the berries will be enlarged, and their flavour diminished by it. A bottle of rum, being placed on a shelf, in a closet in which a canister of coffee-berries, closely stopped, was standing at some distance, in a few days had so impregnated the berries, as to give them a very disagreeable taste. The same consequence happened from a bottle of spirits of wine. The berries should never, therefore, be laid to dry in houses where sugars are curing, or rum is kept; nor sent over in ships freighted with rum, or pimento; lest they acquire the flavour of these commodities, which cannot be avoided, if they are stowed in the same place [1].

From what has been said it appears, that the soil, to be chosen for the cultivation of coffee-trees, should be rather dry than moist, in which they will not grow so luxuriantly as in wet mountain-soils, nor the produce be so great; but as the quality of the produce will be so much more improved, so it will certainly turn out more to the planter's advantage.

The next thing necessary is to permit the berries to remain so long upon the trees, till their skins are shriveled, and turned black, and that the berries readily part from the stalk. Their weight, it is true, will be greatly diminished; but the commodity will be more than double the value of that which is gathered sooner.

When gathered in the proper state, they must be well dried by exposure to the air, but carefully preserved from exposure to moisture.

And, when thoroughly dry, they should be packed in very tight casks, in preference to bags, and shipped in those vessels which have

[1] Miller.

no rum, or other species of freight, that will impregnate them with a detrimental flavour. It certainly deserves the attention of the planters in this island to improve this article to their utmost, and not to have so much regard to the quantity, as to the quality of it; for, although the former may plausibly appear to have the advantage in profit, it certainly has not, since the goodness of every commodity always claims the preference at market, commands the best price, and becomes the quickest in demand.

Eight Negroes are equal to clean and gather from fifty to sixty acres, and upwards, according to the bearing of the trees; and fifty acres will yield, at least, *500 l. per annum*, if well taken care of. I have known a man, with two assistants, manage a walk of thirty acres, besides attending other work.

An ingenious gentleman, some years ago, caused a pound of coffee to be analysed by distillation, and found it yield,

	3 3 €
Spirit, or Phlegm, —	6 6 0
Oil, — —	2 4 2
<i>Caput mortuum</i> , —	5 3 0

It yielded almost double as much oil, as horse-beans; and almost treble as much, as wheat.

The virtues of it are thought to consist in its oil. The separation of this oil is promoted by roasting; and it is what gives the peculiar flavour to the infusion; for the raw berries impart none but what is very disagreeable, and unattended with the effects peculiar to roasted coffee. Taken in moderation, it is allowed, by physicians, to exhilarate the spirits; quicken the action of the stomach; dispel the load and pains in the head, proceeding from faulty digestion; and to clear the ideas. It is most appropriated to moist, phlegmatic temperaments; and, though decried by some writers, is experimentally found medicinal and innocent, if never taken in excess.

Per stat. 5. Geo. III. c. xlvi. §. 33, coffee must be imported into Great-Britain in packages of *one hundred and twelve pounds weight nett at least*, and stowed openly in the ship, or vessel (*i. e.* not secreted), on penalty of forfeiture [*m.*].

4. COTTON.

[n.] In the pamphlet * lately published by Mr. Ellis, agent for the island of Dominica, are several very sensible remarks, which are pertinent to this subject. The whole of that excellent little tract

* Historical Account of Coffee, &c. 1774.

deserves

4. COTTON. — *Gossypium seminibus majoribus Brasilianum.*

This shrub was probably brought into the island by its antient Indian inhabitants from the South-American continent. It is propagated

deserves perusal. Its professed design is to give information to our West-India coffee-planters, and suggest the surest means of enabling them to rival the Orientals. I shall therefore select such parts of it as may tend, with what has already been mentioned, to improve the culture of this article in our Island.

They, who have been accustomed to drink coffee frequently, maintain an opinion, that the Asiatic is superior to the American; that its odour is more refreshing, its flavour more grateful: they even pretend a great difference between what is of foreign growth in America, and that which is grown in our own islands. If this opinion is not founded on the caprice of taste, but on certain and common experience; the superiority of the Asiatic coffee must arise chiefly from its being cultivated in soils best-appropriated to it; from the length of its voyage to the European markets; from the greater age it acquires, by this means, before it comes into the consumer's hand; and from its not being packed, on board ship, with goods whose steams might impregnate and vitiate its flavour, if they were to be stowed in too near a neighbourhood. The French, and most other foreigners, cultivate and ship it with an attention to these points; which in our islands are generally unheeded. Some very good judges of this matter have thought, that coffee might be brought to as great perfection in our colonies, as it is in Mocha, or other Eastern places. Whether this be possible or not, it is certainly worth our trial to put in practice those methods which, there is no doubt, will greatly improve it, if not render it equal in value at market to the Asiatic. In order to which end, the following remarks are submitted to the consideration of our coffee-planters in Jamaica; with such additional comments as may serve for illustration.

Soil proper for it.

The part of Arabia, from whence the Asiatic coffee is brought, is, for the most part, extremely sandy, dry, and hot. A light soil, dry and elevated slopes, produce coffee of a smaller berry, and more delicate flavour; but that, which grows in a low, sterile, and moist soil, is bad, the berry large and flat, and almost insipid. The drier the soil, the smaller will be the fruit, and the quality more excellent. Regard must therefore be had to the transplanting of this tree, that it may not be carried from that soil, where it might have attained great perfection, to another, where, though it may grow larger, and more luxuriant, the fruit may degenerate in quality; for we may safely infer, that a plant, brought from a dry, sterile, sandy soil, will assume, not only a very different appearance, but its fruit will have a very different quality from that which is the produce of a fertile, moist soil. Plants therefore, removed from the South-side of our island to the North-side, or from a husky, impoverished piece of ground into a clayey, loamy, or brick-mould soil, or from places, where it seldom rains, to others where the atmosphere is always cool and moist, may bear large, succulent berries, but of very inferior goodness. It ought to be planted in a soil as similar to its natural one as possible. There are some kinds of trees, perhaps the greatest part, whose fruit, while the trees are young, is either more insipid, or the taste of it less refined, than at a more advanced age. The fruit of young walnut-trees is large; but it is watery and insipid: as the tree grows older, the nuts decrease in size; but their taste is more agreeable. A similar progress may be observed in other species. And it is not improbable, but the coffee-tree may be another instance of the like properties; for it is certain, that the fruit of old coffee-trees is much smaller; but whether the flavour of it is likewise improved must be left to the decision of future experiment. The remark, however, will be sufficient to justify the planter's caution not to cut down an old walk, in expectation of obtaining more excellent berries from one to be newly planted in its room.

It is true, that the trees, planted in rich soils, yield commonly from twelve to fifteen ounces of coffee *per plant*, and upwards (see p. 682.); and that, in dry soils, they scarcely furnish more than from six to eight ounces: which makes an immediate difference of one half in the weight. Now, at the European markets, the only stated difference, in the price of the small, well-prepared coffee, and that which is larger and of the worse kind, is from fifteen to twenty *per cent.* The planters therefore find it their advantage to plant their trees in the richer soil. Those only will have the small and fine berries, who have no other than bad grounds, and have not a sufficient number of Negroes to improve them. And thus self-interest prevents many from applying themselves to the culture of that kind of coffee which is most valued in Europe: for the remedying of which, and exciting a spirit of emulation among them, the difference of price between the various sorts of coffee should be as considerable, as

pagated by the seed, which is sown, about five feet asunder, at the latter end of September, or beginning of October, and at first but slightly

it is between the several kinds of sugar. But, notwithstanding this difference, it may justly be questioned whether an improvement of quality might not, by bringing it into more general cultivation, cause the consumption to become double, or treble, what it is at present; in which event, the planters, who bestowed the most pains in the culture and curing of it, would be the greatest gainers. Be this as it will, the proprietors of worn-out land in Jamaica, which is not rich enough for a longer cultivation in canes, might find it turn to good account in coffee, much better perhaps than in pasture; for such kind of land, which is either naturally too infertile, or too much exhausted, to be capable of yielding either good canes or rich grafts, would probably answer perfectly well for the production of coffee of the most esteemed sort.

Gathering the Berries.

The Arabians, when they perceive the fruit come to maturity, spread cloths under the trees; which they shake, and the ripe fruit drops readily. This circumstance deserves the particular attention of the West-India planters, most of whom are accustomed to gather it as soon as it turns red, and before it begins to shrivel: whereas the Arabians wait for the tokens, which shew that the berries have attained to their full maturity. It is a certain fact (as I have before hinted), that the ripe berries, which spontaneously fall to the ground when they are dry, or have been shaken down by the wind, have by far the best flavour.

Manner of Curing.

The Arabians, after gathering the berries, spread them upon mats, and expose them to the sun (others say, they lay them in the shade) until they are perfectly dry; and, after they are cleared from the husk, the drying is again repeated, to prevent them from heating on board ship. After this, they are winnowed, or well cleaned; without which, they would not be so marketable, nor produce so good a price. Objections are made to drying them in the sun, on the supposition that this process may extract great part of their virtues, particularly the fine flavour good coffee has, which is so grateful to the smell, when it is first poured out. And, in the smaller islands, other objections are made to the expence of erecting buildings, to shade their coffee from the sun and rain. For my own part, I conceive that moisture is the principal bane to coffee; and that it is not so much injured by exposure to the sun and breeze. They, however, who think differently, may, in Jamaica (where materials for the purpose are plentiful enough in all parts), construct a drying-house, or shed, where it may be guarded from dews or rains, as well as from a too violent action of the sun upon it, and yet be sufficiently ventilated by a continual circulation of air.

Shipping it.

The French exceed us vastly in this respect; and the greater price, which the coffee of their American produce gains beyond ours, is owing, in a great degree, to their superior care and management. One would hardly suspect the merchants and planters could be capable of so much inattention, as to ship coffee in vessels loaded with rum and coarse sugars, confined in a ship's hold. So much of it ought to be collected together at one place, as to load a vessel. This is a point very easily to be regulated in Jamaica, either by the society of coffee-planters at their meetings, or by the merchants there, who buy it up for exportation, and who ought to use equal care not to stow it in their ware-houses (before its embarkation) among casks of rum, sugar, pimento, ginger, salt-fish, or other commodities of strong smell, whose vapour may be communicated to the coffee, and alter the qualities of it in any degree. The French put it into casks that are perfectly dry. In the Windward Islands, where the best of their American coffee is made, the ship is neither laden with raw sugars, nor rum. Clayed sugars only are exported with it; which are of little, if any, detriment to it. The captains take care also to place it between decks, or in some other very dry part of the ship. The English, on the contrary, stow raw sugars and rum in almost every part of it; and these do a considerable injury to the coffee that lies near them. Most of the English ships are hired for the freight; the captains stow the goods as they receive them; and the owners are satisfied, if the vessel is but well-filled. It is a matter of little concern to them, whether the several kinds of goods have been properly disposed, or whether they have received any detriment by lying near each other. The French ships are generally laden for the proprietors own use: the captains buy the goods themselves; and, that they may be able to give a proper account of their management, and to shew that they have acted with prudence and caution, they are obliged to pay great attention to the stowage of their vessel, and to the preservation of their cargoes. Hence it follows, that the coffee, which is carried to France, is better than that which is brought to England. Another point

ought

slightly covered. After it springs up, and becomes a plant, the root is well-moulded. The seed is subject to decay, when it is set too deep, especially

ought not to be omitted; which is, that our plantation coffee is made use of too soon. Perhaps, one part of the excellence of the Mocha coffee arises from this circumstance: the East-India company send a ship once in two years; it is most probable, a part of the loading has been kept, in that hot country, above a year; it is six months before it arrives in England; it may be six or twelve months more before it comes into the consumer's hands. Thus between two and three years must inevitably intervene between its growth and consumption. Much of that malaise, which most probably in roasting is the basis of its flavour, is changed by this delay; and, indeed, experience confirms it. Dr. Fothergill mentions his having received a present of raw coffee from the West-Indies. Some of this, which a year ago was so ill-tasted as to be unfit for use, was laid by in a very dry closet. This year it was again tried, and found to be greatly amended. In another year, it will probably be little inferior to the Asiatic, if it continues to amend in proportion.

It is of much consequence therefore, whether the coffee is kept in moist, damp ware-houses, or in dry, airy places; whether it is shipped with other goods, or alone; whether it is used immediately, or not until after it has been kept a considerable time. It might be well worth the planter's labour and expence to keep his coffee in the island, from year to year, till he has got such a quantity, either of his own, or bought from his neighbours, sufficient to load a small vessel, marking the different ages on the several casks. A merchant in Kingston, in which town there is no want of excellent, dry ware-houses, might set apart one for the sole purpose of receiving coffee; and, collecting that of the smallest berry, keep it stored for a twelvemonth, and then remit it to England, in a vessel chartered for the purpose; excluding all other commodities of the island, except mahogany, which would serve to cover the bottom part of the hold, while the coffee might have a dry stowage above and between decks. It seems probable, to think that such a cargo, being housed with equal care on its arrival in England, and lodged in a ware-house distinct from rum, sugar, or pimento, would repay the loss sustained by keeping so long on hand. This, indeed, is partly proved by the amended flavour of that coffee, which, by reason of the glut at market, and low price, has not met with a prompt sale.

The best Means of encouraging its improved Cultivation.

It may be of use, to consider the measures which would soonest put our planters upon overcoming every difficulty; which would oblige them to study the culture of this plant, the curing of the fruit, and sending it home in the highest perfection possible. By what means can it be made the West-India planter's interest to cultivate coffee in such a manner, as to approach, in taste and flavour, as near to the Asiatic as possible? The short answer to this is, "Make it their interest;" that is, encourage its importation. The duties and excise on coffee from our plantations are as follow:

	<i>l. s. d.</i>
The duties at 1 <i>l.</i> 13 <i>s.</i> 6 <i>2</i> ₃ <i>d.</i> per hundred weight, amount, <i>per lb.</i> , to about	0 0 4 or upwards.
Excise, at 8 <i>l.</i> 8 <i>s.</i> per hundred weight, amounts, <i>per lb.</i> , to about	0 1 6

Total, *per lb.*, is — — — 0 1 10 and upwards.

When such an excessive load of expences, and so many difficulties, arise to the grower, importer, and of consequence to the consumer, of West-India coffee; it is no wonder, that the planters give themselves very little concern about its cultivation. At present, there is very little difference in the produce, and consequently in the price. *The high tax upon it is a bar to its consumption**. The coffee is, in general, bad; and the price in proportion. If the duties and excise upon it were lessened, the consumption would be increased; the planters would find it more deserving their attention; taste would grow more refined; the best would be sought for; and the price would advance in proportion: but the present duties are almost prohibitory, and are the true reason why the planters do not afford the time, experiments, and charge, that are necessary towards amending and

* The truth of this must be obvious to most persons; for there are none scarcely but must have observed, that, in middling families, coffee is regarded as a costly article of regale, and therefore seldom (or never) brought to table, except on extraordinary occasions. At the same time, no family is so poor, as to be without tea: yet coffee is more generally liked by those who have ever tasted it; and, if it were not for the expensiveness of it, occasioned solely by the exorbitant duty and excise, would be as universally drank; instead of being, as at present it is, attainable only by the richer families; who, together with the frequenters of coffee-houses, are its chief, if not only consumers, and that in a more sparing degree than they would be, if the price of it was reduced by lessening the tax it is now charged with.

especially in wet weather. The soil, most proper for it, should not be stiff, nor shallow, as this plant has a tap-root. The ground is hoed

perfecting its quality. The planters in our islands not only could furnish the whole amount of the present consumption, but any further quantity that might be wanted. A few years since, the excise on foreign coffee was raised, for the encouragement of the British islands: but the duty and excise on our own were left as before; which are so considerable, as to restrain the middling and common people, who alone make a large consumption, from the use of it. The French, in this, seem to have understood their interest better. *Their coffee pays but a small duty; and tea is scarce heard of among them.* It might be so in Great-Britain, did we not make that article, as well as chocolate, dearer than tea, by disproportionate and enormous duties; which, otherwise, would be sold as cheap, and probably be the means of preventing, in a great measure, the exportation of our bullion to China. We see at present (1774), that a temporary suspension of the India company's purchases of tea has considerably affected the price of silver; so that we may soon expect a new coinage, which would not have happened, had they continued to drain this kingdom of bullion as formerly. This can only be avoided by substituting another *social, refreshing liquor*, instead of tea. Coffee and chocolate are its natural rivals; and would, in all likelihood, have the superiority, if government would be satisfied with their contributing to the necessities of the state in the same proportion: more is at present exacted; and that alone disables them from a competition. It may be thought strange, that articles, which our own colonies can raise, should pay a higher duty than a Chinese commodity, the place of which they might supply. This assertion, however, may be proved in the most convincing manner.

One eighth part of an ounce of tea, i. e. one spoonful and an half, is commonly used for the breakfast of one person. At that rate, a quarter of a pound is consumed in thirty-two days; which, to avoid fractions, we will consider as a month, both with respect to the other articles and this; so that, upon the whole, it will make no difference. A quarter of a pound per month is three pounds in the year.

One quarter of an ounce of coffee is usually allowed for a good dish; and it may very well be supposed, that, were it cheap, three such dishes would be consumed for a breakfast: however, to avoid objections, let us reckon but two; which will require half an ounce of coffee, that is, *four times* the weight of the tea, consequently one pound in a month, and twelve pounds in the year.

It is common to give out one of the small divisions in a cake of chocolate (of which there are eight in a quarter of a pound) to make one dish: two at least would be requisite for a breakfast; and they would weigh an ounce, which is *eight times* as much as the tea, and *double* the weight of the coffee. The consumption of the month would be two pounds; and, of the year, twenty-four.

From hence it is plain, that, if tea is charged with duties and excise to the amount of 2*s.* 10*d.* per pound, which is actually the case, roasted coffee, of which *four times* the quantity is necessary for the same purpose, ought to pay but *one fourth* of that sum, that is to say, 8*d.* and $\frac{5}{8}$ *d.* per pound; and chocolate, *one eighth* part, or 4*d.* and $\frac{5}{16}$ *d.*: and, if the duty and excise should continue to be paid on the coffee before it is roasted, they ought to be near one quarter less, because it loses of its weight, in roasting, 2*lb.* on 11*2**lb.* The loss of weight on the chocolate nut is likewise 1*8**lb.* on an hundred. Allowing for which, the duty on roasted coffee will be reduced to 6*d.* and $\frac{3}{8}$ *d.* (and chocolate should not pay quite 3*d.*) instead of 3*s.* 6*d.* per hundred on plantation coffee at the custom-house; that is, 4*d.* per pound, and 1*s.* 6*d.* per pound, at the excise; in all 2*d.* It must be afterwards roasted, which reduces 11*2**lb.* to 8*lb.*; and 2*d.* upon raw coffee is full 2*s.* 5*d.* on the roasted.

On landing chocolate-nuts, 1*s.* 1*1**2**d.* per hundred is paid, which is 1*4**d.* per pound; and the excise on the chocolate, when made into cakes, is 2*s.* 3*d.* per pound more: therefore, the duty upon a pound of this article is nearly the same as on coffee, though *double* the quantity is required for a breakfast. The duties on tea are as follow: twenty-five *per cent. ad valorem*, paid by the East-India company, and as much by the buyer, making together fifty *per cent.*; and that, on the average value of tea, is 2*s.* 1*2**d.* per pound; for, according to the best information from the tea-brokers, 3*s.* 9*d.* is the *medium* price at the sales; the high-priced sorts, the hyson and souchon, not being a tenth part of the importation. Besides the above duties, there is 1*s.* per pound excise; in all 2*s.* 10*d.* per pound on 3*s.* 9*d.* value, which is *eighty per cent.*: while plantation coffee, which is rated at 1*s.* *d.* though in reality it sells but for 6*d.* and chocolate-nuts, that are nearly of the same value, pay 2*s.* 5*d.* per pound, which is *four hundred and eighty per cent.* Nothing more is wanting to prove the assertion in regard to the duties, but the bringing into one point of view the sums that

hoed frequently, and kept very clean about the young plants, until they rise to moderate height; otherwise, they are apt to be destroyed by

government would receive, on each person's annual consumption, upon the footing that has been proposed.

The Consumption of a Year.

	L. s. d.
On 3 lb. of tea, valued at 3s. 9d. per pound, which is	0 11 3
The duty and excise, at 2s. 10½d. amount to	0 8 7½
On 15½ lb. of unroasted coffee, which, when fit for use, would be reduced to 12 lb. the prime-cost, at 6d. per pound, is	0 7 7½
Supposed duty on the 15½ lb., at 6½d. per pound, is	0 8 6½
On 29½ lb. of chocolate-nuts, which would make 24 lb. of chocolate, the prime-cost of the 29½ lb., at 6d. per pound, is	0 14 7½
Supposed duty thereon, at 3½d. per pound,	0 8 6

The duties, payable at present on the same quantities of the two last articles, stand thus:

	L. s. d.
On 15½ lb. of unroasted coffee, equal to 12 lb. when fit for use, at 1l. 13s. 6½d. per cent. which is about 4d. per pound,	0 5 1
Excise on the same, at 1s. 6d. per pound,	1 2 10½
	<hr/>
	1 7 11½

On 29½ lb. of cacao-nuts, at 11s. 11½d. per hundred weight, i.e. at 1½d. per pound, Excise on that quantity made into chocolate, producing 24 lb. at 2s. 3d. per pound,	3 0½
	<hr/>
	2 17 0½

To prevent all objections to this proposal for lowering the duties and excise on coffee to 6½d. and on cacao to 3½d. per pound, the following plan is submitted, for compensating to government any difference which may be supposed to arise from this diminution of the duties, and likewise for putting an entire stop to the smuggling of coffee, and chocolate, or cacao.

1. To let the custom-house duties on plantation coffee remain as they are.
2. To convert the excise, now paid upon foreign coffee, into a duty, not to be drawn back upon exportation; for that would certainly give occasion to great frauds. This will make no difference to government on Mocha coffee.

3. To take off the *vide récé* on coffee and chocolate; and make up any supposed deficiency on the plantation coffee and chocolate, by a proportionable tax on licences for keeping a coffee-house, or any houses where coffee and chocolate may be sold ready-made. Persons, who keep such houses, will have no reason to complain of the tax, as they will be able to purchase these articles, of *British growth*, at a very low rate. Nor will it be any hardship upon their customers, because there will be no occasion to raise the price to them. Another consideration, in favour of this plan, is, that the payment of the tax cannot be evaded, and will be easily levied. The reduction of the duties would bring all, that is shipped from our colonies, to a regular entry; at least, this is very probable, as there would then be no temptation left for smuggling it. It remains only to consider, what difference the increased consumption of coffee and chocolate, in lieu of tea, would make with respect to navigation. The East-India company has lately agreed to pay 26l. 10s. per ton for freight from China. One ton answers the same purposes as four tons of coffee; and the freight on that quantity, at the usual rate of 5l. 10s. per ton, would be 22l., which is something less than on the proportional quantity of tea. But the difference is very considerable in favour of chocolate: and there are most material advantages attending the West-India navigation, in preference to the East; particularly, that our brave sailors are less liable to fatal distempers in such a voyage, having no occasion to remain for so long a continuance aboard a ship; and, what is of great importance, should their king and country, on a sudden emergency, need their assistance, it may soon be commanded. On the contrary, when once a ship from China has left our ports, we can expect no service of that kind from the crew for eighteen months, however much they may be wanted.

The favourable interposition of government may yet not only save the coffee plantations in our islands from ruin, but put them upon a more flourishing footing than ever. Nothing more seems necessary than to regulate the duties upon an equitable footing; and, if coffee and chocolate should

pay

by caterpillars. It grows from four to six feet, and produces two crops annually; the first in eight months, from the time of sowing the

pay a proportionable duty with tea, it may be asserted, that the revenue cannot be lessened by the former taking place of the latter. On the contrary, as the West-India produce is all paid for in our manufactures, the ingenious artist, the tradesman, and husbandman, at home, must be better enabled to pay taxes: the duties and excise upon coffee and cacao being reduced, more than double the quantity (especially of the former) would be consumed. Such an enlarged consumption would make it the interest of the planters to cultivate the trees with more care. It is certainly of great moment, that the lesser planters should be able to gain a subsistence by the cultivation of these small articles, which require but little stock, and no great expence for Negroes. No little planter, generally speaking, can go upon sugar with advantage; the expence of Negroes, cattle, works, and other requisites of a sugar-plantation, are beyond his reach. If he has any landed property, by one means or other he is often obliged to sell it to his richer neighbour, and remove to some other country, less unfavourable to contracted circumstances. Thus the islands are gradually thinned of white inhabitants, and become less able to quell the insurrections of their Negroes, or to oppose any hostile invasion. Whatever articles of product, therefore, tend to divide the landed property, to multiply the distribution of it, and consequently furnish subsistence to a greater number of white inhabitants, certainly must add to the strength and security of the islands.

Manner of preparing the Infusion, and its useful Qualities.

The French inhabitants in the Windward Islands always make use of coffee for their breakfast, taking equal quantities of the infusion and boiled milk (or rather milk that is scalded); and, after their dinner, they commonly drink a cup of coffee without milk; and they have, in general, excellent health, and a fine flow of spirits: whereas the English subjects, whom it is difficult to wean from prejudices, still persist in the use of tea; and, though they enjoy a good state of health, do not appear to have half the vivacity of the French in the same islands. If the coffee is old and well-roasted, and immediately covered up, smoking-hot (when the roasting is finished), in a bowl, or cup, to prevent the fine, volatile particles and flavour from going off; if then, when cold, it is ground, and made properly with boiling, good water; it is looked upon to be in its highest perfection. The better sort of French, in all the islands, make a practice of taking a cup of equal parts, coffee and scalded milk, with a crust of bread, almost as soon as they get out of bed in a morning: and the reasons they give for this custom are, that it clears the brain, enlivens the spirits, cleanses the stomach, throws off any rheum or fortuitous matter that may be lodged about the head, stomach, or lungs, from foul vapours; and they likewise say, that it prevents, and even cures, the gravel. The Turks also set the highest value upon good coffee, on account of its exhilarating qualities. Surely then it must be preferable to tea, which has quite contrary effects.

Coffee, made in the following manner, is pleasing to most people, and is much preferable to tea, or to coffee made in the usual manner, for breakfast. "Let it be made in the usual manner, only a third part stronger; let as much boiling milk be added to the coffee, before it is taken from the fire, as there is water; let it settle; drink it with cream, or without, as may be most agreeable." Were the poor and middling people enabled to procure this, it would be much more nourishing and beneficial than the wretched beverage they indulge themselves with of the most ordinary teas. Doctor Fothergill mentions, that, although he was fond of tea, he found it unfavourable to his health. He then tried coffee, made in the manner above-recommended, and has drunk it almost constantly, many years, without receiving any inconvenience from it. He thinks it difficult to determine how far the French custom, of drinking it immediately after dinner, is right: but it can admit of no dispute whether a dish of coffee, or a bottle of wine, may *then* be less prejudicial to health. It is less injurious, however, to drink coffee immediately after dinner than later in the evening; for it most certainly promotes watchfulness, or, in other words, suspends the inclination to sleep. Was it substituted, instead of the bottle, immediately after dinner, it seems more than probable, that many advantages would flow from it, both to the health of individuals, and general economy: and it seems not improbable, but, by deferring coffee or tea so late in the evening as is usually practised, we interrupt digestion, and add a new load to that already in the stomach, which, after a full meal, is not a matter of indifference.

To conclude. In respect to real use, and as a part of our food, there is no evidence to induce us to think that coffee is inferior to tea.

the seed; the second, within four months after the first; and the produce of each tree is reckoned about one pound weight. The South-side planters generally cultivate it in May, and gather, in the January following; but, unless they have rain between January and April, which more often fails than happens, they rarely make much of the second crop; for which reason, September seems to be a fitter season for planting the seed, as it will have certain rains in October, to establish its vegetation; and, being gathered about May, the showers, which may probably fall in the succeeding weeks, promise to ensure a tolerable second crop. The seed is set, in regular lines, at the distance before-mentioned, so as to let the branches spread freely, which however are sometimes pruned, if the soil be too rich, and their growth over-luxuriant; and they are likewise pruned, or trimmed, constantly after the first gathering. When the pods are come to maturity, they burst open, and disclose their seeds, intermixed with the flock, or wooll. When great part of the pods are thus expanded, the crop begins, the wooll is picked, and afterwards cleared from the seeds by a convenient machine, of very simple contrivance, called a gin, composed of two or three smooth, wooden rollers, of about one inch diameter, ranged horizontally, close and parallel to each other, in a frame; at each extremity they are toothed, or channeled longitudinally, corresponding one with the other; and the central roller, being moved with a treadel, or foot-lath, resembling that of a knife-grinder, makes the other two revolve in *contra* directions. The cotton-wooll is laid, in small quantities at a time, upon these rollers, whilst they are in motion, and, readily passing be-

In respect to national economy, the benefit of our colonies, and the lives of the seamen, every circumstance concurs to give coffee the preference. It is raised by our fellow-subjects, paid for by our manufactures, and the produce ultimately brought to Great-Britain.

The great obstacle to a more general use of coffee is the very high duty and excise.

Leflenering these impositions would not lessen the revenue. Smuggling would be discouraged; and an increased consumption would make up the deficiency to the treasury.

The planters would be induced to cultivate it with more attention, and with more skill, if there was a better market for it.

As the lesser planters might be able to subsist by raising this, and other small articles of West-India produce, their numbers would increase, and add to the defence and security of the several islands; more especially since the cultivation of such articles would be attended with no greater labour than what Europeans are capable of enduring without any peril to their lives.

Upon these various considerations, it is to be hoped, that government will see its error before it is too late; and, by relieving the planters from the immoderate burthens laid upon them, which are so ruinous to their industry, prevent the cultivation of these articles from being wholly lost to our islands, the latter weakened and discouraged, and the revenues of Britain impaired, as they must be, if coffee, cacao, and cotton, should no longer be worth the expence and labour of being attended to in our own West-India settlements.

tween them drops into a sack, placed underneath to receive it, leaving the seeds (which are too large to pass with it) behind. The wool thus discharged from the seeds, comes afterwards to be hand-picked, and cleansed thoroughly from any little particles of the pods or other substances which may be adhering to it. This is a tedious though necessary operation; but is easily performed by children or invalids, who are fit for no other work: it is then stowed in large bags, where it is well trod down by a Negroe, whilst it is thrown in, that it may lie close and compact, and the better to answer this purpose, some water is every now and then sprinkled upon the out-side of the bag. This operation is performed in a shady place, that the moisture may not evaporate too suddenly. The weight of a marketable bag is usually 300 lb. and that weight *per acre* may be expected from plants.

To bring therefore the profit of this cultivation into view, we may suppose a planter possessed of ten able Negroes, and twenty acres in cotton, the produce may be rated as follows:

Acres.	Number of Plants.	Produce lb. w.	Bags.	Price Sterl. gros per lb.	Gros Profit. £. Sterl.	
20	6000	6000	20	1 s. ditto.	300	1st Crop.
	ditto.	3000	10	ditto.	150	2d Crop.
		9000	30		Total £. 450	<i>per ann.</i>

In the parish of Vere, 240 lb. wt. *per acre*, is reckoned tolerably good yielding; this makes the produce of twenty acres 4800 lb. wt. which falls short of the above computation; for an average therefore of rich and poor land, good or indifferent seasons, we may take 270 lb. *per acre*.

One Negroe labourer will gin from 50 to 60 lb. *per day*. Three Negroes will therefore gin the above quantity in about 54 days at a medium; consequently, such a planter will have leisure sufficient, during the year, for attending to corn, provisions, and other articles.

All our fustians, calicoes, Manchester velvets, &c. are made up by the help of this commodity; and it therefore contributes to maintain a very capital part of the commerce of Britain and Ireland; for these stuffs are in demand in all quarters of the world to which our trade extends; and particularly in those countries which are situated within the Tropics. Nor can there be any sort of cloathing better adapted to hot climates; for they readily imbibe the moist vapours of the skin, without repelling them like linen; nor do they decay so soon.

It is supposed, that not fewer than 120,000 persons are constantly employed in England in different branches of the manufacture of this single staple. There is but little of it worked up at the places of its growth, except in the fabric of hammocks; and even this little branch has never yet reached Jamaica. In some parts of the island, as in Vere, a few industrious housewives make knit stockings with it, for their families; and some few planters spin their own wick for lamps in crop time; but, probably, not a third of a bag is spent in this way, as the greater number buy what is imported from Great Britain.

In this example we have a proof of the great comparative value of the West India colonies, which do not rival Great Britain in manufactures, over those which are dangerous competitors with her. This disparity begins from the very verge of the Tropic, and grows more visible, the further we recede from thence to the Northwards. In the *Carolinas*, I have been informed, that the planters have in general so great a number of looms at work, as to be able to cloath their black and white labourers with a coarse fabric of cotton cloth: they save, by this means, a heavy annual charge, being the *growers*, as well as *manufacturers*. If the Jamaica planters were to pursue the same scheme, and each to set up a loom in his house, the loss to Britain would be near 300,000*l.* sterling *per ann.*; but such establishments only take effect in very populous colonies, where the people are too poor to buy, can afford cheap labour, are not over nice in their cloathing, and cannot give their time or hands to more lucrative purposes.

In Jamaica it is not worth while to enter upon such a manufacture; because, upon computation, it would come to a higher price than a better fabric imported from the mother country; because labour can be applied to more gainful works; because the inhabitants are fond of being well dressed; and, lastly, have a variety of staples, which require too constant attention to give them leisure for attending the loom.

The Indians of the island, when it was discovered by Columbus, manufactured this article into hammocks and apparel. Nature having denied fleeces to the sheep of these climates, this vegetable wool seems to have been given them as a substitute; and it is certainly the best appropriated, and wholesomest material, for a Tropical dress.

The seeds are esteemed efficacious in the bloody flux ; and an oil is obtained from them by expression, which supplies the boiling-house lamps on some plantations.

5. CACAO. *Theobroma.*

This tree once grew so plentifully in Jamaica, that the inhabitants flattered themselves, it would become the source of inexhaustible wealth to them ; in 1671 there were sixty fine walks in bearing, and many new ones in cultivation ; but some years afterwards they were all destroyed at once, as it is said, by a blast, which pervaded the whole island ; so that they were never afterwards recovered ; and, at present, there are but very few ; the greatest discouragement in going upon this article being the extreme tenderness of the young plants, and the length of time they require to come to maturity ; which most settlers are too sanguine and impatient to wait for, but rather apply to other commodities, which make a quicker return, although it is certain that a good cacao walk, once established, is far more profitable, and demands fewer labouring hands, than almost any other marketable West India product. There are many trees still in the island, scattered about in the woods, and found chiefly in rich, cool bottoms, that are sheltered from the winds. As the cacao is a very capital article in trade, and may be produced as such in this island, I shall lay down the best rules, for the culture of it, that I have been able to meet with.

The most proper soil for the plants is a moist, rich, and deep earth ; for they generally send forth one tap-root, which runs very deep into the ground ; so that, whenever they meet with a rocky bottom near the surface, they seldom thrive, nor are long-lived. A rich glade of brick-mould near water is perhaps the best situation of any. Before the plantation is begun, the ground should be well prepared, by digging it deep, and clearing it from the roots of trees and noxious plants. When the ground has been thus prepared, the rows should be marked out with a line. Some of the largest, finest pods, full ripe, are then to be selected ; and, after being kept two or three days from the time of their gathering, they are opened, the nuts taken out, and thrown in a small vessel of water ; such as swim are to be rejected ; the others are washed clean from the pulp, the outer skin taken off,

and

and they are suffered to lie in shallow water, till they appear just ready to sprout. A hole is then made about one foot diameter, and six inches deep, in the ground prepared for their reception. A plantain leaf is laid in the hole, so as to retain a length at one end of about eight inches above ground; the mould is lightly rubbed into the leaf, till the hole is filled; and the nuts are afterwards set triangularly in it, three in a hole, at two inches depth, care being used to place them with their ends perpendicular; they are to be covered with mould, loosely shaken over, and the extremity of the plantain leaf folded down, and kept in that position, with a small stone laid upon it. In about eight or ten days time the plants will appear above the mould; the plantain leaf is then raised, and some thatch tree, or other strong leaves, are set round, to shade and protect the young plants from the sun. Small hurdles, of about eighteen inches, made in basket work, or reeds bundled together, would perhaps be preferable, as they are fixed more firmly by their stakes in the earth, so as not easily to be thrown down by the wind, and brush off the seed leaves of the plants; for these are only the tender divided lobes of the kernel, and the loss of them would wholly put an end to their further growth. These screens are continued about six months, after which, the Spaniards take a branch of *coral bean tree*, and set it S. S. W. (in Jamaica it should be N. N. E.) at a small distance from the plants, and intermixed between the rows. These slips will grow up with the cacao, and defend it from blowing, violent weather.

The young plants are so susceptible of injuries from strong winds, a too hot sun, or great droughts, that they cannot be too well secured against such accidents. For this reason, the most sheltered situation must be chosen for them. The winds most to be feared in Jamaica are the N. E. S. E. and Southerly. Some defend the young plants, by planting plantain suckers about two months, or cassada six weeks, before the seeds are set. They plant the nuts in the rainy season, or, at least, in cloudy weather, or when rain is expected; and, in case the weather proves too dry and scorching after the young cacao makes its appearance above ground, they contrive to water it, by laying pieces of rag, cotton, or even weeds, thoroughly wet, gently round the stem, and let them rest there, till the earth has absorbed a considerable portion of moisture; a watering-pot, with a rose head of very

very small holes, would, no doubt, be less troublesome, and perform this operation much better ; but the water used for the purpose should be taken from a river, and suffered to stand for some hours in a tub or cistern, previous to its being used. Plantain trees afford the most natural and agreeable shade for these plants, while very young ; but, as they rise, they should be furnished with a more substantial defence against the inclemencies of the weather, till they attain to full perfection ; and it ought even then to be removed with caution.

If the walk is extensive, a few large timber-trees may be left on the outline, or skirts, here and there, to break the force of the wind. The Spaniards set orange-trees, but they are, I think, too slow in their growth. I have seen the horse cassia, and mammee, used for this purpose ; and they seem better adapted, from the largeness of bulk, and thick shady leaves.

When the cacao is six months old, the planter, from this period, must not be too fond of cleaning the walk from grafts and herbage ; because they keep the ground cool ; but all creeping, climbing plants, and such weeds as grow high enough to overtop the cacao, should be destroyed. The distance for laying in the seeds may be about sixteen or eighteen feet from tree to tree.

The reason for putting in three seeds is, because they seldom all succeed ; or, if all grow, they will not all be equally vigorous ; when therefore they are about eighteen inches high, one of the weakest and most unpromising of the three may be drawn up, and thrown away, care being taken not to injure or disturb the roots of the two remaining. It is found by experience necessary to plant the seeds where the trees are to remain ; for the transplanted trees will never thrive, nor bear well, on account, as is supposed, of the tenderness of the tap-root, which, if it be the least injured, will bring on a decay of the tree.

In two years time, the plants, having grown to the height of about five feet, will begin to flower ; these first blossoms are always plucked off ; for, if suffered to remain, and produce fruit, the vigour of the trees will be greatly impaired, and they will never bear well afterwards. Their fruit is not allowed to remain for maturity till the third year, and then only so much as seems proportioned to the strength of each tree. By these precautions they will afterwards yield a larger,

better nourished fruit, and hold their vigour much longer. In the fourth year they are permitted to bear a moderate crop, but some flowers are generally pulled off from those that appear too weak, in order that they may recover their strength, before they are old. When planted in a good soil, and properly managed, they will continue vigorous and fruitful for thirty years. They bear two crops a year; the greatest in December or January, the other in May; and from the time when the flowers drop off, to the maturity of the fruit, is about four months. The time of maturity is known by the yellowness of the pods, and the rattling of the nuts, when the pods are shaken. The latter are then plucked, the nuts picked out, and leaving the pulp, if any remains upon them, they are exposed every day to the sun, for a month, upon mats, blankets, or skins [n]. It is best not to wash off the pulp, as it makes them keep the longer. The pods contain no certain number; they have from ten to twenty, and even thirty nuts; but this depends chiefly on the right training them, during the first three or four years of the growth. When thoroughly cured, or dried, they are ready for the market.

After a walk is once established, it renews itself, the roots sending out suckers, to supply the place of the old stocks, when decayed, or cut down.

The produce of one tree is generally estimated at about 20 lb. of nuts; which, at 5*l.* Jamaica currency *per* cwt. is worth 1*l.* A walk of ten thousand trees will therefore yield a yearly profit of 10,000*l.* The produce *per* acre in Jamaica has been rated at 1000 lb. weight *per annum*, allowing for bad years.

In poor soils, and under bad management, the produce *per* tree rarely exceeds 8lb. wt.; and ten thousand such trees will therefore yield 4000*l.* When well cured, the nuts are plump, smooth, oily, and of a bitterish taste, eaten raw.

The chymical oil extracted from them is extremely hot, and esteemed a good embrocation in paralytic cases; the Mexicans are said to eat the nuts raw, to assuage pains in the bowels.

The chocolate, so much and so justly preferred by the West Indian natives to most other aliments, is highly restorative, insomuch, that one ounce of it is said to nourish as much as a pound of beef. It is

[n] It is usual first to lay the pods in heaps to sweat for three or four days before they are opened.

esteemed

esteemed in all countries where it is known, and is found a suitable part of diet for all ages, but in particular agreeable to infants, old persons, valetudinarians, and such as are on the recovery from sickness; and, prepared with milk, it is highly approved of in consumptive habits.

From what has been premised it appears, that this is not a plant which can be every where cultivated. It will not thrive in the dry, low parts of the South side, nor on elevated or rocky spots in the mountains. It requires a flat, rich, moist soil, well sheltered by surrounding heights; which occasioned Sir Hans Sloan to remark, "that it is but ill living where there are good cacao walks;" for such moist, unventilated places are, without doubt, the most unwholesome for mankind to reside in. Yet, where such glades or spots are found, they certainly cannot be turned to any sort of culture, that will yield more profit; and it does not follow, that, because a settler is possessed of such a spot, that he is therefore to live upon it; since the situation supposes the neighbourhood of higher spots more proper for constant residence.

Sir Thomas Modiford, about the year 1670, drew a plan for the settlement and management of a cacao walk, with a computation of the expence.

At that time, Negroes were bought for two-thirds less than the present rate; common white servants were to be had without wages, and 24*l.* a year was thought sufficient for the wages and diet of an overseer. The expence now, compared with what it was in his time, is as 700 to 250, or near 3 to 1 more; it is needless, therefore, to quote his calculation, but his general directions in regard to forming such a plantation, may be of some service.

He proposes six able Negroes, and four white servants, with one overseer, and the land in wood. The first operation, after providing proper dwelling-houses, is to fall, clear, and plant four acres in potatoes; which, if the work is begun in the middle of March, may be very easily performed with ten hands, by the middle of April. After this, they may continue to fall, clear, and set plantain suckers until the latter end of February in the following year. In this space, which is above ten months, they may have cleared and planted 21 acres, besides keeping clean the ground that is planted. A good stock of provisions

being now at hand, ten more hands are to be purchased; and in the course of the month of March, the cacao nuts are planted between the rows of plantain trees, then about five or six feet high, so as to have the whole 21 acres in cacao by the first of June.

These, in five years, (according to Sir Thomas Modiford) will produce compleat crops, and at 1000 lb. wt. per acre, will yield 21,000 lb. wt.; worth at the Jamaica market (at the present prices) from 5*l.* to 6*l.* per cwt., 105*l.* to 126*l.*

The whole of this small plantation, we find, is compleated in about fifteen months; and during the five years that the cacao requires to attain maturity, annual additions of some acres may be made to the walk, corn may be planted, ginger, or coffee; hogs and small stock bred; and various other kinds of business attended to, for a present gain; and when once the walks are come to perfection, the largest may be managed, and the crop gathered and cured, with very few hands.

6. GINGER. — *Zinziber vel Amomum Scapo nudo, Spicá ovatā.*

This is propagated by the smaller pieces, prongs, or protuberances of the root, each of which throws up two different stems; the first bears the leaves, and rises to the height sometimes of three feet, or upwards, but its usual growth seldom exceeds 18 inches. It thrives best in a rich, cool soil, and, therefore, what has been recently cleared from wood, is well adapted to the culture of it, more especially, as it is supposed to be a great impoverisher of land. In such a soil, it grows so luxuriantly, that a hand, or large spreading root, will weigh near a pound. It is, however, remarked, that what is produced from a clayey, tenacious soil, shrinks less in scalding, while such as is raised in the richer, free, black moulds, loses considerably in that operation. The land intended for the cultivation of it, is first well cleared with the hoe, then slightly trenched, and planted about the month of March or April. It attains its full height, and flowers about August or September; and fades about the close of the year. When the stalk is entirely withered, the roots are in the proper state for digging. This is generally performed in the months of January and February. After being dug, they are picked, cleansed, and gradually feethed or scalded in boiling water, they are then spread out, and exposed every day to the sun, till sufficiently dried; and after being divided into parcels of about

100 lb.

100 lb. wt. each, they are packed in bags for the market: this is called the black ginger. The manner of scalding the roots is as follows: a large pot or copper is fixed in the field, or some convenient place, which is kept full of boiling water; the picked ginger, being divided in small parcels, is laid in baskets, and plunged alternately in the water, where it is suffered to stay for a space of ten or fifteen minutes; it is then spread on a platform for drying; but care is taken during the process, to change the water so soon as it becomes much impregnated with the juices of the root.

The white sort differs but little from the black roots. The difference there is, arises wholly from the methods of curing them; the white is never scalded, but instead of this easy process, they are picked, scraped, and washed, one at a time, and then dried; all which requires too much pains and time for any real advantage to be gained in the properties; though, being made more agreeable to the eye, the price of the white is much higher at market.

When the root is intended for a sugar preserve, it is dug while tender, and full of juice; the stems at this time rarely exceed five or six inches in height; the root is carefully picked, and washed, and afterwards scalded, till it is sufficiently tender; it is then put in cold water, and peeled and scraped gradually. This operation may last three or four days, during which it is commonly kept in water, and the water frequently shifted, as well for cleanliness, as to extract more of the native acrimony. After this preparation, it is laid in unglazed jars, and covered with a thin syrup, which in two or three days is shifted, and a richer put on; this is sometimes again removed, for a third, or fourth; but more than three are seldom requisite. The shifted syrups are not lost, for in Jamaica they are diluted with water, and fermented into a pleasant liquor, called cool drink, with some mixture of the chaw-stick, lignum vitae, and sugar.

A ginger plantation, which should also contain sufficient pasture and provision, may require about 146 acres; of which, 50 being allowed for ginger, may produce about 140 lb. per acre, in all 7000 lb. wt., or 70 bags of 100 lb. each, which at 25 s. currency per cwt., is 87 l. 10 s. = 62 l. 10 s. sterling.

	Bags.	Casks.	lb.
	1 cwt. each.	600lb. each.	
In the year 1738 this island exported,	20,933	817	8864
which is the largest quantity ever shipped from it in one year.			
In 1748, it fell to	— — —	1961	79
And, at a medium then taken of three years, it was found to be <i>per ann.</i>	1992	43	1300
Which is not quite one-eighth of the export of 1738.			

At present, the export is very small, this article not being so much in demand at the British market as it formerly was, when large quantities were re-exported to Russia and Germany. Yet the price now (or lately) given, seems to make it a commodity worth attending to, especially the preparing of the white sort, which as it requires more pains, so it is much higher prized; the medium of this sort being lately at 57*s.* 6*d.*, and of the black 30*s.* sterling *per cwt.* The cultivation of it will not answer so well, as some other commodities, in old lands; but in fresh-opened soil, in a wet part of the country, it might pay well for the planting, by the largeness of its roots in such a situation, and by lessening the exuberant richness of such land, which makes it unfit for the sugar cane.

The preserved ginger, if exported to Great Britain, is liable to so high a duty as a succade, that the remitter cannot fail of losing considerably by his adventure. What is sent, therefore, in this form, is chiefly in presents.

Whether in its natural state or candied, this root is esteemed a good remedy against the colic, loosenesses of the belly, and windy disorders. It strengthens the stomach, helps digestion, and is often added as a corrector to purges; its use in culinary preparations is well known.

7. PIMENTO, JAMAICA PEPPER, ALL-SPICE. — *Caryophyllus Foliis lanceolatis oppositis, Floribus racemosis terminalibus, et axillaribus.*

This tree rises to the height of thirty feet, and is found almost every where in the woods of Jamaica; it is also cultivated in many parts of the island, but chiefly the North side, and planted in regular rows.

It begins to fructify in three years after it is first planted, but does not arrive at maturity under seven, and then it repays very abundantly the patience

patience of the planter. It seems particularly fond of a white marley, or chalky soil, having a shallow surface of mould, and of the rocky lands, which can scarcely be put to any other use; but it requires refreshing showers in its infant state, and, therefore, is trained with difficulty in the most Southern hills near the coast. It grows luxuriantly, and bears well, in every richer mould, on a gravelly substrate, and rarely fails expectation, planted any where, except the parts mentioned; but when cultivated in places which are subject to drought, the *berries* (and not *young plants* brought from inland mountains) should be set immediately before the autumnal seasons.

It flowers in June, July, and August; but in several places sooner or later, according to their situation, and different seasons for rain; and after it flowers, the fruit soon ripens, though earlier in open grounds, than in thick woods. It is generally gathered in July, while green; for if the berries are suffered to remain till they are full ripe, they will not cure. They are, when ripe, of a dark purple colour, and full of a sweet pulp, which the birds devour greedily, and muting the seeds afterwards, propagate these trees in all parts of the woods. It is thought that the seeds passing through them in this manner, undergo some fermentation, which fits them better for vegetating, than those gathered immediately from the tree; and I believe this is the fact, for the ripe berries will take with more certainty, after being laid together some few days to sweat, than when immediately put in the ground, or kept separate till the pulp is dried.

They are gathered in their green state, by twisting off the twigs either with the hand, or a pole cleft at one end. The berries are then separated from the leaves, and other particles, and laid on cloths spread over the barbecues, or terraced floors raised a little above the surface of the ground, inclosed with an upright ledge of eight or ten inches in height, and divided by transverse partitions into four or more square compartments, that each may contain a day's picking. During the first and second day they are turned often, that the whole may be more exposed to the sun; but when they begin to dry, they are frequently winnowed, and laid in cloths to preserve them better from rain and dews, still exposing them to the sun every day, and removing under cover every evening, till they are sufficiently dried, which usually happens in ten or twelve days, and is known by the darkness of their com-

plexion, and the rattling of the seeds; they appear at this time wrinkled, and have changed from green to a very dark brown; and in this state, being ready for the market, they are stowed in bags or casks. Some planters kiln dry them with great success, and it seems indeed a most eligible method, where, from the abundance of the crop, dispatch, and security against rain, are very essential [o].

Some of these trees are observed to bear no fruit, which has led several persons to conjecture, that there are male and female trees; but Dr. Browne refutes this notion; asserts they are hermaphroditical, and supposes, that if those called males were lopped and broken like the rest, for one or two years, they would produce equally well.

As there is so great an affinity between this and the true clove, it has been proposed, as worthy of trial, if the fruit, when first formed, or the flowers picked off the tree, and dried, might not answer the same purpose as the Asiatic; at least, it might answer as a good *succedaneum* for that spice, and deserves the experiment, as being the growth of our own colony. The quantity exported from Jamaica may be estimated, one year with another, at 2,000,000 of pounds, or upwards, which at 7*d.* per lb. is worth 58,333*l.* sterling [p].

A walk once formed, is attended with little or no labour, or expence, till the time of gathering, and this is performed with very few hands; nor is the land useless for other purposes; for under the trees is generally good pasture for cattle, horses, or sheep. Some who possess a sugar plantation, as well as a walk, contrive to attend both; the pimento crop coming in, just after the sugar crop is finished.

The more odiferous and smaller the berries are, the better they are accounted at market. The leaves and bark are full of aromatic inflammable particles, for which reason the growers are extremely cautious not to suffer any fire to be made near the walks, for if it once should catch the trees, they would consume with great fury. Nothing can be more delicious than the odour of these walks, when the trees are in

[o] As a proof of the superior utility of this process to that of sun-drying, no less than 2000 lb. wt. has been gathered, kiln-dried, and shipt in the space of twenty-four hours. In curing, it loses about two-thirds of its weight.

[p] The duty and charges amounting to 2*½d.* per lb., there remains for clear profit only 4*½d.*, which by most of the planters is thought too little to answer the capital, and the labour employed upon this article; but I question, if this opinion will not appear rather unreasonable; the only point which seems to give it some justification is, that the crops are very precarious.

blossom,

blossom, as well as at other times; the friction of the leaves and smaller branches, even in a very gentle breeze, diffusing a most fragrant and exhilarating scent through the circumambient atmosphere; they are esteemed, therefore, the most wholesome places of residence. The berries have a resemblance in smell and taste to cloves, juniper-berries, cinnamon, and pepper, or rather a peculiar mixture, somewhat akin to them all; whence their name of *all-spice*. It is deservedly esteemed the most temperate, mild, and innocent, of all the common spices, and fit to come into more general use, instead of the Eastern commodities of this kind, which it far surpasses, by promoting digestion, attenuating tough humours, moderately warming and fortifying the stomach, expelling wind, and doing other friendly offices to the bowels.

Distilled with water *per vescam*, it yields a very fragrant chemical oil, which sinks to the bottom of the water like oil of cloves.

A decoction of the leaves, used by way of fomentation, has relieved in rheumatic aches and pains in the bones. One of the principal advantages arising from a pimento plantation is, that the crop lasting only from two to three months, the Negroes may be profitably employed in any other branch during the remainder of the year.

The yielding *per acre* is computed about one thousand pounds weight, clear profit about 18*l.* 15*s.*

8. WILD CINNAMON. — *Canella alba*, or *Bastard Cortex winteranus*.

This tree is very common in all the lower woods and rocky hills of the island, growing without any care, and propagated chiefly by the birds. For the berries, like those of the pimento and other aromatic plants, grow soft and pulpy when ripe, and lose all that pungency that is peculiar to them in their immature state; they are therefore greedily devoured by the wild pigeons, and other feathered inhabitants of the woods, who disperse the seeds in different places with their muting. The bark, which is the *canella alba* of the shops, consists of two parts, the outer and inner; the outward bark is as thin as a milled shilling, of a whitish ash, or grey colour, with light spots here and there interspersed upon it, and several shallow furrows of a darker colour running variously through it, and making it rough; the inward bark is much thicker than cinnamon, and twice as thick as the outer coat, smooth, and of a lighter complexion, of a much more biting aromatic

taste, somewhat like that of cloves, not glutinous like cinnamon, but dry, and crumbling between the teeth.

All the parts of this tree when fresh are very hot, aromatic, and pungent to the taste, resembling cloves.

It is cured without any difficulty by drying in the shade; what is taken from the branches is thinner, and rather milder than from the body of the tree, more nearly approaching to the true cinnamon.

The bark yields by distillation a warm, aromatic oil, which is often sold for, and generally mixed with, oil of cloves; nor is the adulteration thought of any prejudice to the medicine.

It is reckoned a good remedy in scorbutic habits; invigorates the blood, is carminative, and stomachic. Powdered and snuffed into the nostrils, it is cephalic, and produces a copious discharge of rheum.

It is used by most apothecaries instead of the true *cortex winterianus*, and may very well supply its place.

Four ounces of the bark, with six ounces of *cassia lignea* (which it very much resembles), and one gallon of proof spirit, (a handful of common salt being thrown in to dephlegmate the spirit) makes a cinnamon water; and the greater part of what is vended in the shops is compounded in this manner.

A quantity of the bark mixed with badly distilled rum, is said to discharge in part its nauseous empyreumatic taste and smell, probably by promoting the union of the oil with the spirit; but what the proportion is, I cannot direct, having never made the experiment. The export of this article is, at present, too inconsiderable to merit notice.

9. ALOE. — *Aloes semper vive.*

This plant was first brought into the island from Bermudas, as it is said; but there are several species, and the sort from which the best aloes for the shops is produced, has very long narrow leaves, with spines on their edges [q].

[q] The succotrine aloe is thus described. It has long, narrow, succulent leaves, which come out without any order, and form large heads. The stalks grow to the height of three or four feet, and have two, three, and sometimes four of these heads branching out; the lower leaves spread on every side, but the upper leaves turn inward towards the centre; the flowers grow in long spikes, upon stalks about two feet high, each standing upon a pretty long foot stalk; they are of a bright red colour, tipped with green. This species is not common in Jamaica, but might easily be procured from the green-houses in England. The more common sort here is, what is called the Barbadoes aloe, which is very inferior to the succotrine, in the opinion of the faculty; as being more acrid in its nature, and rough in its operation.

It is cultivable in the most dry, parched, and barren soils, where few other vegetables will grow, and thrives wherever it finds mould enough to cover the roots. It is propagated by suckers, which spring from the roots or stumps of the old plants, set in little shallow pits, at the distance of eight to twelve inches asunder; and care is taken to keep them free from weeds, for some time after they are planted.

When they are grown to a perfect state, the labourers go into the field with tubs and knives, and cut off the largest and most succulent leaves close to the stalk; these are immediately placed in the tubs, and ranged one by the side of another in an upright position, with the cut part downward, that all the loose liquor may dribble out at the wound. Some make also a longitudinal incision from top to bottom, to facilitate the discharge. When the juice has been by this means sufficiently extracted, it is put into shallow flat-bottomed receivers, and gradually exhaled in the sun till it has acquired a due consistence; and thus prepared, it is packed in large dry gourds for exportation. The best of this manufacture is shining, transparent, fat, and in hot weather somewhat soft; of a yellowish, or purple-reddish colour, but when powdered is of a shining gold colour, with an aromatic bitter taste, and strong aromatic smell, almost like myrrh. The planters frequently administer the crude juice to their children in worm disorders, and with very good effect.

The inspissated juice consists of two parts, a gumous and resinous; the purging quality resides in the former, and must be extracted by a watery *menstruum*; the latter is astringent, and is extracted with spirit of wine.

In general, it is not only a good purge, but used as a remedy against disorders of the bile. It has the peculiar property of loosening the body, when given in the smallest doses, but when given in too large a dose, it is apt to create haemorrhages, and particularly the piles; it is also improper for women with child. In moderate doses it promotes the piles and *menes*, purges off viscid humours, opens obstructions in the bowels, strengthens the stomach, helps digestion, and provokes an appetite; but it is best in cold constitutions, and flabby relaxed habits, and after surfeits, or hard-drinking, when there is no symptom of an inflammation.

The crude juice, drank with milk, heals ulcers in the kidneys and bladder, and destroys worms. The Indians first compounded it with

myrrh, and formed an admirable medicine (externally applied) for cleansing and healing the worst ulcers, even when the bone has been rendered carious; this they called *moceber*; and the tincture in frequent use, made from these two substances, was borrowed from this Indian discovery.

The method of preparing the common, or horse aloes, is not so tedious, nor does it require so much care; for in manufacturing this sort, all the leaves are cut off, severed into junks, and thrown into the tubs, there to lie till the juice is pretty well drained out; they are then hand-squeezed, and the liquor mixed with water in the proportion of about one quart of water to ten quarts of juice; after which, it is put into convenient boilers, and evaporated to a due consistence, which may easily be known by dropping a small quantity from time to time upon a plate, and observing the thickness as it cools, it is readily discovered by the touch, or the eye, after a little experience: when the juice is brought to the proper state, it is emptied into large shallow coolers, and afterwards into small barrels.

As the drofy resinous part of the aloes is not soluble in water, it has been found, when combined with other mixtures, an excellent preservative to ships bottoms against the worm, and was first applied to this use by the Indians. The ships trading in the East and West Indies are particularly subject to the annoyance of this worm, which frequently burrows through all the planks that lie below the surface, especially in harbours. The result of several experiments, tried by a person at Bermudas upon different sorts of wood, proves, that a mixture of one ounce of aloes, allowed to two superficial square feet of plank, is the just proportion. There are various coats with which it may be incorporated; one of the best is, 6 lb. of pitch, 1 lb. of Spanish brown or whiting, and one quart of oil; or the like proportions of turpentine, Spanish brown, and tallow, may be used. Such a coat, incorporated with aloes, will preserve a ship's bottom for eight months, provided it is made tenacious and binding, and is not rubbed off by any accident. About 12 lb. wt. is sufficient for a vessel of 50 tons burthen, and so in proportion; according to which, about 300 lb. wt. will be found enough for a first-rate man of war.

In preparing the aloes to be more effectual for this purpose, a larger portion of water may be mixed with the juice when set on to boil, viz. two quarts of water to every one gallon of juice; and after sufficient boiling,

boiling, or when the water is thoroughly impregnated, it should be shifted into any commodious vessel; suffered to stand for twelve hours, and the water then poured off: by this process, the soluble part, or gum, which is of no use in the operation, will be extracted; and what remains in sediment is the dross and resin, which being left to remain till it is pretty well-dried and brought to consistence, exposed to the air and sun, will be fit for use.

The aloes, thus prepared, may be worth about 6*l.* sterling *per cwt.* And at this rate, the expence to a vessel of 50 tons will be about 15*s.*, and for a first-rate ship, of 2000 tons, no more than 18*l.*

It is but justice to this commodity to recite the effects of one experiment, tried by the person before-mentioned. He took several pieces of oak, cedar, and mahogany plank, of two feet in breadth, and four feet in length, and with particular distinct marks to prevent mistakes, put on different coats, or compositions, some with, and some without, the aloes mixture; these were suffered to lie under the sea-water for eight months; and, upon taking them up, he found that where the aloes had made part of the composition, there were few impressions made; one piece, in particular, was as fresh, sound, and untouched, as on the day when it was put in; this had been besmeared with turpentine, tallow, Spanish brown, and aloes; but the other pieces, which had none of the aloetic mixture, were perforated, and eaten into a honeycomb.

The use therefore of this ingredient would certainly produce a saving of many thousand pounds *per annum*, both to the merchants, and the crown. It is the bitter nauseous acrimony which resides in the resinous part, that renders it a very proper defence against every species of insects; and this part, being indissoluble in water, will adhere to the plank unimpaired, so long as the composition lasts, with which it is blended. Neither an extravagance of price, nor apprehensions of a scarcity, need be any objection to the general use of it. The savannahs, and other barren places in Jamaica alone, are capable of producing much more than could be employed by all the shipping belonging to the British dominions; and, was it encouraged by a regular demand, Bermudas and other colonies would enter upon the cultivation, so that the price could probably never rise high.

The same composition may be used with great advantage in Jamaica, for preserving the rafters and other timbers belonging to the floors and roofs

roofs of buildings, from that destructive insect the wood ant; nor would a preparation of the aloes be less efficacious in securing books from the depredations of the *Scarabaeus*, which, in its reptile-state, is a great enemy to all that are newly bound. If in binding books intended for this island, and other parts of the West Indies, a small quantity of the aloes tincture, made by solution in spirits of wine, was mixed up with the binder's paste, it would effectually prevent the attacks of this insect.

The quantity of aloes exported from Jamaica, is extremely inconsiderable at present; but, as an article of growth, and as it may be prepared for different demands in commerce, at very little expence and trouble, and is to be propagated in almost any soil, it could not with propriety be omitted; more especially since in the variety of soil here, the settler may turn the different parts of his land to the culture of such plants as appear best appropriated to them.

10. Great American ALOES, or CORATOE, — *Agave*.

This plant is found in most parts of the island, but is most frequent in the rocky hills of the South side, and near the sea coast; it likewise grows very luxuriantly in the richer soils of the mountains, always preferring those which are most rocky. When designed for cultivation, it is to be observed, that it blossoms in the spring, and the top is then covered with a multitude of little plants, which are to be carefully gathered as the stems wither, and planted from eight to ten feet asunder in any soil. The lower leaves of the moderate-grown plants may be cut off for use, without injury to the others, care being taken not to lop away so large a quantity, as to prevent the plants from vegetating and flowering; the nutriment received, from rains and dews, being chiefly collected by the expanding leaves, and transmitted to the root.

The leaves of this plant are extremely large and succulent; after being cut, they are passed between the rollers of a mill with their point foremost; and the juice being conducted into wide, shallow receivers, through a coarse cloth or strainer, in these receivers it is suffered to lie exposed to a hot sun, like the other aloes, until, the aqueous contents being exhaled, it is reduced to a thick consistence. It

may then be made up into balls, or any other figure, with the help of lye ashes, which prevent it from sticking to the fingers, after which it may be kept for years, and serve for use as well as Castile soap in washing linen ; but it has the superior quality of mixing and forming a lather with salt water, as well as fresh.

Hence it appears, how very useful this composition must be at sea in long voyages, for example to and from the East Indies ; nor is it less convenient in those situations adjoining to the sea, where the water is hard or brackish, and immiscible with the common soap.

Another method of preparing this soap, is by cutting the leaves in pieces, pounding them in a large wooden mortar, and then expressing the juice, which is brought afterwards to a consistence, either by exposure to the heat of the sun, or by boiling over a fire. One gallon of juice, thus prepared, will yield about 1 lb. avoirdupoise, of a soft extract. It will answer, prepared in either of these ways, provided the juice, before exposure to the sun, or the fire, is very carefully strained ; for otherwise it will be intermixed with small particles of the bruised fibres, and outer membrane of the leaves ; which, being indissoluble notwithstanding the boiling or exposure to the sun, will remain in the same state after the juice becomes inspissated, and may abrade and injure any fine linen washed with it ; for in such case, these little particles act like the bristles of a scouring brush. A caution must be used, never to compound the extract with tallow, or any other unctuous materials ; for such mixtures destroy its effect. This method of preparing a vegetable soap was communicated to the public, first, by Mr. Anthony Robinson, a practitioner in surgery in the island, and very able botanist, who received a premium for it from the assembly. It has not as yet become an article of export ; but, even though it should happen to be discouraged by the British parliament, as likely to interfere with the soap manufacture of the kingdom, the settlers, especially of the poorer class, may find their account, in being able to furnish themselves with so necessary a domestic article, for their own private use, by so easy a process, and at the expence of very little trouble in procuring a plant which abounds every where, and will thrive without any care bestowed upon it, after being once set in the ground.

The leaves are used likewise in Jamaica, for scouring pewter, and other kitchen utensils, and floors, which work they perform to admiration.

The

The inward spongy substance of the decayed stalk takes fire very readily when quite dry ; and, for this quality, is often used by fishermen, and others, instead of tinder.

The Indians, on the South American continent, separate the fibres of the leaves, by bruising and steeping them for some time in water, and afterwards beating them till they are entirely disentangled ; these fibres make an excellent strong thread for their common uses, of clothing, fishing lines, and nets, &c.

The crude juice, mixed with sugar, has been administered internally, for provoking the *menstrua* ; it is a great diuretic, and cleanser of the gravel and stone.

The inspissated juice, or extract, well boiled, and spread upon leather, or white paper, may be used as a plaster upon parts affected with the gout. At the first application it seems to increase the pain ; for it draws strongly a sort of dew or moisture from the part ; but in three or four hours the pain ceases ; and the part affected grows stronger every day, the plaster being left till it drops off. If the extract is not well boiled, it will be apt to occasion a violent itching.

II. OIL-NUT-TREE, PALMA-CHRISTI, AGNUS-CASTUS.—*Ricinus Americanus.*

It is not a part of my plan, to define all the varieties of the plants exhibited in this catalogue. Botanists reckon eight species of this plant; I need say only, once for all, that, for general comprehension, I have conceived it sufficient to recite, first, the popular names, and opposite to them, the common general term given by botanists. A display of science is not requisite nor expedient, where the principal object has respect to the useful qualities of each plant, whether for manufacture, food, medicine, or commerce ; descriptions at large are added where they were supposed absolutely necessary. The oil-nut plant is now much cultivated in Jamaica ; it is raised from the nut or seed, grows with a surprizing rapidity to the height of fifteen or sixteen feet, and seems to flourish most in gullies, or near running water, in cool shady spots. The seeds being freed from the husks or pods (which are gathered upon their turning brown, and when beginning to burst open), are first bruised in a mortar, afterwards tied up in a linen bag, and then thrown into a large pot, with a sufficient quantity

quantity of water (about eight gallons to one gallon of the seeds) and boiled till their oil is risen to the surface; this is carefully skinned, strained, and kept for use [q]. Thus prepared, it is intirely free from all acrimony, and will freely stay upon the stomach, when it rejects most other medicines. This oil is consumed on many of the plantations, in the boiling and still-houses, during crop, and much preferable to the filthy, stinking lamp-oil imported from North America and Britain; for it affords a clear, lively light, emits no disagreeable smell, is obtained at less than one half the expence, and may be kept many years without growing fetid. When intended for medicinal use, the oil is more frequently cold-drawn, or extracted from the bruised seeds, by means of a hand-press. But this is thought more acrimonious, than what is prepared by coction.

The cold-drawn oil at first is perfectly limpid; but, after being kept for some time, acquires a pale tincture, resembling Lisbon wine, probably caused by the membrane which covers the kernels. It is administered, with the greatest success, in the belly-ach, and all obstinate constipations of the bowels, given from one, to even four or five ounces. It is likewise taken, with perfect safety, by infants afflicted with worms, which it both destroys, and sweeps away; and therefore much superior to calomel, or tin-powder. It is given to new-born children, within the nine days, in a dose of one tea spoonfull every morning, mixed with a little melassas, or any other syrup, to purge off the *meconium*; which purpose it effectually answers, and has saved the lives of many thousand Negroe children. The retention of this excrement has been fatal to multitudes, by bringing on mortal convulsions, generally known here by the name of *jaw-falling* [r]. The

[q] One gallon of nuts will yield about one quart of oil.

[r] Some of the ablest physicians have concurred in preferring the oil obtained from nuts, to olive-oil, in vermicular cases; the reason of which is, that, as the worms have their bodies overspread with extremely minute pipes, which are necessary to their respiration; and, which being plugged up or stopped, they immediately die; so oils are found to answer this effect; and nut-oil, much sooner, and with more certainty, than any other; as its parts are less porous, and therefore better qualified to exclude the air, the want of which destroys them.

It is mentioned by some writers, that in certain parts of Italy it is a common practice, for mothers, to give their infants, once or twice a week tasting, pieces of toasted bread dipped in nut-oil: and that what they use for this purpose, is extracted from the *beech-nut*, and seldom fails to clear their bowels of these dangerous animalecles; the *ricinus* oil is equally powerful, and might be administered after the same manner.

leaves of this plant are applied to blisters, instead of melilot; boiled with ground ivy and wild ginger, and then fermented with a little sugar or molasses, a drink is made, which purges strongly, and is a very signal specific in dropsies, yaws, and pains in the joints, occasioned by the venereal. The leaves, applied to the head in fevers, relieve pain, and excite a diaphoresis in that part; made into a cataplasm, with cassada flour, and a little of the oil, and applied to female breasts; they discuss coagulated milk, and hardness.

The oil, externally used, is excellent in removing cramps, and pains arising from colds, and kills lice in the heads of children.

It is but of late that this oil has made an article of the Jamaica exportation, and that only in very small quantities; it now forms part of the British *materia medica*, but is most usually obtained there from the seeds imported in barrels; the oil, drawn in the West Indies, not being encouraged, because it is *a manufacture*. What is intended for exportation, should be packed in jars, well stopped with corks or plugs, covered with waxed cloth, and properly tied, or wired, or in small tight casks. The oil is not subject to contract rancidity, unless it is made from parched or roasted seeds, which are impregnated with an *empyreuma*.

12. ANOTTO, or Roucou—*Bixa*.

This shrub is very common in Jamaica. It loves a rich soil, and shady situation, and shoots luxuriantly near rivulets. The pods, or seed vessels, when full ripe, are of a deep brown colour, open of themselves, and contain between 30 and 40 seeds, covered with a splendid red *farina*. When a sufficient number of these seeds are collected from the pod, they are thrown into any convenient vessel, and as much hot water poured upon them as is necessary to suspend the red *farina*, which is gradually washed off the seeds by the hand, or a spoon. When the seeds appear quite naked, they are taken out, and the wash left to settle; after which, the water is gently poured away, and the sediment put into shallow vessels, to be dried by degrees in the shade; and, after acquiring, by this means, a due consistence, it is made into balls, or cakes, and set to dry thoroughly in an airy place

place until it is perfectly firm, in which state it is fit for market. This plant is propagated by the seeds, in any moist and fertile soil, among the mountains.

The powder is cooling, cordial, and much used by the Spaniards in their chocolate and soups, both to heighten the flavour, and give them an agreeable colour.

Medicinally administered, it is esteemed good in bloody fluxes, and disorders of the kidneys. Mixed with lemon juice and a gum, it makes the crimson paint, with which the Indians adorn their persons. It was formerly used by dyers, to form the colour called *Aurora*; and then sold in America at nine shillings a pound; but at present it is not held in such estimation as a dye, though it still maintains its ground with painters.

It generally bears fruit in December. The bark makes good ropes for the common plantation uses.

13. VANILLA. — *Epidendrum.*

This plant is a climber, and rises with great ease to the tops of the loftiest woods. It is found wild in many parts of Jamaica; but has been particularly noticed at the North-side, in the parishes of St. Mary, St. Anne, and St. James. It grows luxuriantly in cool, shady places; and may be propagated from the seed, or bean, or by the germ. It is chiefly planted in low, rich soils, along walls, or at the feet of trees, or other props. The pods grow in pairs, are generally the thickness of a child's finger, of about five or six inches in length, green at first, then yellowish, and turning to a brownish cast when they ripen. When this plant is designed for propagation, cuttings may be taken, of about three or four joints in length, and planted, close to the stems of trees, in low, moist situations. The earth is afterwards to be kept clear from weeds, which, if permitted to grow about the cuttings before they are well-rooted, would overbear and destroy them; but, after they have fastened their shoots to the stems of the trees, they are out of danger from injuries of this sort. They do not produce flowers until they are grown strong; so that some affirm, that six or seven years pass from the planting to the time of their bearing fruit.

But, when they begin to flower and fructify, they continue bearing for several years without any further culture.

This plant produces but one crop of fruit in a year, which is commonly ripe in May, or fit for gathering; for it is not suffered to remain till it is perfectly mature, because it is then not so fit for use. When it is about half changed yellow, it is esteemed better for keeping, than when it is changed to a brown colour, at which time it splits, and discloses its seeds. While green, it affords no remarkable scent; but as it ripens, it emits a most grateful aromatic odour.

The method, used to prepare the fruit, is to gather it when it turns of a yellow colour, and before it opens. It is then piled in small heaps, to ferment two or three days; and afterwards laid in the sun to dry. When it is about half dry, the pods are flattened with the hand, and rubbed over with the oil of *palma Christi*; then exposed once more to the sun, rubbed a second time with oil, and put in small bundles, covered with Indian leaves to preserve them. In some parts of the South-American continent, the Indians gather and hang them up by one end in some shady place, to dry; and, while they are drying, press them every now and then between the fingers gently, to flatten them; then rub on the oil, to prevent them from drying too fast and bursting open; which is repeated till they are fit to be rolled up in leaves, or paper.

In other parts, after gathering as before-mentioned, they scald them in the following liquor; viz. a brine is made with salt and water, strong enough to bear an egg. To this are added, a fourth part of chamber-lye, and a small quantity of quick-lime: these are boiled together for half an hour, and then taken off. The vanillas are put into this liquor, until they are thoroughly scalded; then taken out, and dried in the shade. When they are fit for market, they are put up, from fifty to one hundred and fifty, in little bags. The Spaniards are very attentive to the manuring and cultivating their vanilla-grounds. After planting in well-dunged land, they take care to mould the plants up as they grow, and fix poles for them to climb upon, as the hops in England are managed.

The vanilla yields a great quantity of oil and volatile salt, and is esteemed cooling, cordial, and stomachic; cephalic, and car-

minative; opening obstructions; and attenuating viscid humours; but it is seldom used in medicinal compositions. It is mixed in chocolate by the Spaniards, French, and Italians, to give it a delicate smell and agreeable flavour. It is likewise used to perfume snuffs and other substances.

14. CONTRAYERVA. — *Aristolochia.*

This plant, which is also a climber, abounds every where among the wood-lands and thickets, on the South and North sides of the island, and rises frequently to a considerable height among the trees and bushes. The root is much in esteem here, and often administered medicinally. Both this and the seeds are extremely bitter, hot, and aromatic. They are reckoned an excellent alexipharmac against all sorts of coagulating poisons; strengthen the stomach; help digestion; discus wind; promote diaphoresis and urine; and destroy worms: for the latter intention, the root is chopped in small pieces, and given by the planters to their horses, mixed with corn.

The root is found to produce several other important effects. It throws out the small-pox and measles; and is a wonderful antiseptic in malignant fevers. It gently purges some by stool; but never fails working powerfully, either in this way, or by urine, or sweat. A simple decoction of it in water has often recovered persons from lingering distempers, lost appetite, and debilitated limbs. But, infused in wine, it makes the finest bitter known; and, with the addition of steel to this tincture, is a great sweetener of the blood.

It is so abundant in this island, that it might be collected annually, in very large quantities, for exportation, if there was a demand for it at the home-market; and it seems to merit this encouragement, as it has been thought, by very able physicians, to be superior in efficacy to the Spanish contrayerva, and is probably another species.

15. CHINA-ROOT. — *Smilax.* With a taper, prickly stalk; and oval, heart-shaped, unarmed leaves.

This plant is frequent in the more cool inland-parts of the island; and is the same as that of the East-Indies. The roots are composed

of many thick, fleshy fibres, which spread wide on every side, and strike deep into the ground; from which come out several stalks, taper, very strong, and armed with short, stiff spines. They fasten themselves by their claspers to the neighbouring trees, and rise twenty feet high, and upwards. The leaves are of a thick substance, and have no spines: they are oval, heart-shaped, four inches long, and three and a half broad at their base, ending in an obtuse point, and have three longitudinal veins. The flowers are small and whitish, have no petals, and come out from the wings of the stalk in close bunches; and the berries are red. It is propagated by the seeds. The root is heavy, woody, beset with unequal tubercles; the colour on the out-side of a dusky red, but within of a reddish white. It has been found difficult in Jamaica to preserve it from a worm, which breeds in it, and destroys all the *farina*, or mealy part, in which its virtues are supposed to reside. The method of guarding against this depredation is, by cutting off all the safer tubercles, or knobs, and steeping it in fresh-made, strong lime-water.

The virtues of it in venereal cases are not now in such repute as formerly. It is of a sheathing nature, and a very fit ingredient in apozemis; it is said also to resolve thick humours, and promote insensible perspiration.

16. ANTIDOTE-COCOON. — *Fevillea*. Browne, p. 374.

This plant is frequent in the mountains, and generally found climbing among the tallest trees in the woods. It bears a pod, which contains several broad, flat seeds, of a reddish colour when ripe. These seeds are largely impregnated with an oil; which is extracted by pressing, and burnt in lamps. The Negroes burn the seeds themselves. They fasten a number of them upon a skewer; and, setting fire to the uppermost, it descends very gradually to the bottom. They are extremely bitter; and, when grated and infused in rum, or other spirits, a small dose opens the body, and provokes an appetite. The infusion is also made with Madeira wine, and taken to relieve pains in the stomach. The oil gives a clear, fine light, when burnt in lamps, and emits no disagreeable smell. But its other medicinal virtues, if it possesses any, have

have not as yet been examined. It is easily cultivated, by planting the seed at the foot of a tree, or a pole. It bears very luxuriantly.

17. TOBACCO. — *Nicotiana*.

This plant is already cultivated extensively in the island; chiefly by the Negroes, for their own consumption. There are several species of it. The best sorts are those of Peru and Vera Cruz; the seeds of which might easily be procured. When a regular plantation of it is intended, several beds are prepared, well-turned up with the hoe. The seed, on account of its smallness, is mixed with ashes, and sown upon them a little before the rainy season. The beds are then raked, or trampled with the feet, to make the seed take the sooner. The plants appear in two or three weeks. So soon as they have acquired four leaves, the strongest are drawn up carefully, and planted in the tobacco-field, by a line, at the distance of three feet between each plant: this is done either with a stick or the finger. If no rain falls, it should be watered two or three times, to make it strike root. Every morning and evening the plants must be surveyed, in order to destroy a worm which sometimes invades the bud. When they are grown about four or five inches high, they are to be cleaned from weeds, and moulded up; and, as soon as they have eight or nine leaves, and are ready to put forth a stalk, the top is nipt off, in order to make the leaves longer and thicker. After this, the buds, which sprout at the joints of the leaves, are all plucked; and not a day suffered to pass without examining the leaves, to destroy a large, green caterpillar, which is sometimes very destructive to them. When they are fit for cutting, which is known by the brittleness of the leaves, they are cut, with a knife, close to the ground; and, after being left to lie there for some little time, are carried to the drying-shed, or house, where the plants are hung up, by pairs, upon lines or ropes stretched across, leaving a space between, that they may not touch one another. In this state they remain to sweat and dry. When they are become perfectly dry, the leaves are stripped from the stalk, and made into small bundles, tied with another leaf. These bundles are laid in heaps, and covered with blankets. Care is taken not to overheat them; for which reason, the heaps are laid open to the air

air from time to time, and spread abroad. This operation is repeated, till no more heat is perceived in the heaps; and the tobacco is then stowed in casks for exportation.

The Spaniards have a method of scenting their manufactured tobacco by wrapping it up in the leaves of a shrub, called *trebole*, or *tribole*, which retains its odour for many years, and is a native of Peru.

The tobacco thrives best in a rich, free soil; but I have seen very fine plants in gardens at Spanish Town, and other parts of the South-side, in very dry and indifferent soils.

The tribole of Peru is probably no other than the greater caltrops, or the field-tribulus (Sloane, cat. 93; Browne, p. 220), a creeping plant, growing in all the pasture-lands of Jamaica, garnished with winged leaves, placed by pairs, opposite, smooth, and set close to the foot-stalk. The flowers come out from the wings of the stalk, composed of five large, yellow petals, which spread open, and have an agreeable odour: these are succeeded by roundish, prickly fruit, ending in a long point. In size and disposition it is something like the Turkey-blossom, so common in the lowlands, and which is another species of the tribulus.

In Turkey, the tobacco-leaves are soaked in salt-water before they are dried, to extract some of their acrimony, and render them more mild. The Negroes in some parts of Africa are said, for the same intention, to squeeze out the juice of the green leaves, and then dry them before a fire.

The juice of the green leaf destroys maggots in sores, beyond any other application; and makes an excellent healing balsam, or salve: when beaten into a cataplasm, with vinegar or brandy, it will remove hard swellings in the liver and spleen. The oil, drawn in a retort from the dried leaf, cleanses the foulest ulcers, takes away their callous edges, and promotes their incarnation and healing. The ashes are an excellent dentrifice-powder, and correct a putrid disposition in the gums.

These, perhaps, are the most innocent uses to which it is applicable; though we find, that, in all hot countries throughout the world, where it grows, the inhabitants have smoaked it from time immemorial. The odour has been thought to correct malignant

effluvia;

effluvia; and it is probably not without some such opinion, founded upon experience, that we observe this custom so universally prevalent. Nor is it found to be noxious to the constitution, unless when abused by an excessive indulgence.

The common tobacco scarcely deserves culture, in this island, for exportation: but the choicer species of Peru, Vera Cruz, and Cuba, might be worth some attention; as the superior quality of their flavour would entitle them to be preferred in Great-Britain to the produce of Virginia; and they may be raised, in Jamaica, in a perfection equal to what they possess in the countries from whence the seed is brought; which is not attainable in the more Northern climates.

18. Small-grained BLACK-PEPPER. — *Piper*. With rough, spear-shaped, oval leaves, having five veins. Browne, 121. Lin. Sp. Plant. 29.

This plant has generally been confounded with the pepper-elder, whose leaves have seven veins, or nerves, and which grows more luxuriantly.

The black-pepper grows here in most of the hilly situations, is very bushy and spreading. It rises to the height of six or eight feet, thrives best in cool, shady places, and seems to delight in a mixed clayey soil.

The seeds, and other parts of the fructification, grow in the same manner with those of the East-Indian black-pepper, from which they differ only in size; for the grains of the Jamaica fruit seldom exceed a large mustard-seed in dimensions: but the taste and flavour are in every respect the same; and there is no perceptible difference between it and that of the East-Indies, whether used in cookery, or seasoning. To collect any quantities of this aromatic, it must be picked when full-grown, and before it ripens or changes colour; for it grows pulpy and succulent in the mature state, and loses its flavour and pungency. It may be left adhering to the natural spikes, or twigs, and dried in the sun, like pimento. These spikes seem to have the same flavour as the grain itself, and are as easily ground to powder.

This pepper, so far from becoming as yet an article of export, has not excited the attention or industry of the inhabitants even to

prepare it for their culinary uses ; instead of which, they send to Britain for the East-India pepper, because it is far-fetched ; and because it is thought too much trouble, to gather what the too bounteous hand of nature has planted in such abundance at their very doors. Yet I conceive some hopes that it may, one day or other, form a commodity for exportation ; at least it is some satisfaction to settlers to know, that they can easily supply themselves with an article in such esteem for domestic use, in every respect analogous to the East-Indian commodity, except in size of the grain, which surely is of no consequence ; though it is probable, that even the size is capable of improvement, like other fruits, by taking the plants out of their wild state, and giving them place in a rich and well-chosen soil, pruning off the too luxuriant branches, lessening the quantity of fruit when the bearing is too great, and such other means as are practised by gardeners for the like purpose. This plant seeds in the month of July, and may be propagated from the ripe seeds. There are three or four other species of this pepper in the island, but not of equal value.

19. INDIAN-PEPPER. — *Capiscum.*

There are about fifteen varieties of the *capiscum* in this island, which are found in most parts of it. Those, which are more commonly noticed, are the bell-pepper, goat, bonnet, bird, olive, hen, Barbary, finger, cherry, &c. Of these the bell is esteemed most proper for pickling. The pods, for this purpose, are gathered before they arrive at their full size, while their skin is tender. They are slit down on one side, to get out the seeds ; after which, they are soaked two or three days in salt and water. When they are taken out of this, and drained, boiling vinegar is poured upon them, in a sufficient quantity to cover them ; and they are closely stopped for two months. Then they should be boiled in vinegar, to make them green ; but they require no addition of any spice ; and are esteemed the wholesomest pickle in the world.

The bird-pepper is gathered when ripe, dried in the sun, pounded, and mixed with salt, and kept, close-stopped in bottles, for use. This is commonly known by the name of *cayan-butter*, and in ge-

neral esteem for the excellent relish it gives to soups, turtle, and other dishes.

These peppers are used liberally in the West-Indies, gathered fresh from the bush, generally before they are ripe; though the bird-pepper has the best flavour in its mature state. Perhaps they are necessary, in this climate, to assist digestion, promote the tonic motion of the bowels, invigorate the blood, and correct the flatulency of vegetable aliments.

The mixture, called *man-dram*, seldom fails to provoke the most languid appetite. The ingredients are, sliced cucumbers; eschalots, or onions, cut very small; a little lime-juice, and Madeira wine; with a few pods of bird or bonnet-pepper, well-mashed, and mixed with the liquor.

The bird and Guiney-pepper are given internally, to cure the dry-gripes in horses or mules, when occasioned by rank or sour grafts. They are likewise externally applied in cataplasms.

An infusion in spirit of wine takes off much of their acrid, inflaming quality.

They are propagated, like the former, by their seeds.

The pickled pepper and cayan-butter may be regarded as articles of export, though not considerable: yet they are objects for small settlers; and, with other minute articles, might greatly help our commerce with the North-Americans.

20. BALSAM-TREE. — *Clusia*.

This shrubby tree grows very abundant in all the Southern district of the island, generally rising to the height of sixteen or eighteen feet. The leaves are round, brittle, and thick; and, when broken, emit a milky, resinous juice, which sticks to the fingers like bird-lime, and soon turns yellow. The fruit and body of the tree are filled with the like balsam. It has no scent, nor pungency. It is used among the Negroes as a vulnerary; but its virtues are still unexplained any further, though it seems to merit some experiment, to determine them more fully.

21. HOG-GUM TREE. — *Metopium*.

The tree producing this gum is frequent enough, and well-known in this island. It is said the wild hogs, when wounded,

used to have recourse to it for a cure. In February the tree sheds its old leaves, and is then very full of sap. On wounding the bark, a pellucid juice issues out, which gradually turns yellowish, and acquires in the air a hard consistence, and dark complexion resembling pitch, and is equally brittle. About two spoonfuls of the juice fresh drawn, if mixed with the same quantity of water, and sweetened with a little sugar, is an excellent remedy in the colic, or belly-ach, gives immediate ease, and produces an evacuation in four or five hours. When it is old, it still retains its laxative quality dissolved in water, but in a gentler degree. It is constantly used here in strengthening-plasters; and, administered in form of pills, it stops a gonorrhœa. It possesses a warm, discutient nature, and may be used with great propriety in all swellings arising from colds, weakness of the vessels, or poverty of the juices, either internally or externally administered. It is thought to be an extraordinary diuretic, and is an admirable vulnerary.

22. GUM LIGNUM-VITÆ, or Pock-wood GUM. — *Gujacum.*

The *gujacum* tree grows in vast abundance on the South-side of the island. I do not remember to have observed any on the North-side. The wood and gum are too generally known, to require a description. The largest trees make a very good remittance to Britain, for manufacturing the trucks of ship-blocks, and a variety of turnery-ware, as well as for medicinal uses. The gum is no less in demand for its virtues in venereal taints, rheumatisms, and other distempers. It is obtained by jagging the body of the tree in May. It exudes copiously from the wounds, though gradually; and, when a quantity is found accumulated upon the several wounded trees, hardened by exposure to the air and sun, it is gathered, and packed in small kegs for exportation. This gum has been suspected, sometimes, to have been sophisticated, by the Negroes, with the gum of the manchineal-tree, to which it bears some similitude at the first appearance; but it is easily distinguished by dissolving a little in spirit of wine, or rum. The true gum imparts a whitish or milky tinge; but the manchineal gives a greenish cast: and this is still further distinguishable, by pouring a little of the same tincture

ture into fair water, which takes from the *gujacum*, almost immediately, the complexion of milk.

The fruit is shaped like a heart, flattish, and of a bright-yellow colour, containing a reddish, pulpy substance, enveloping a small, black, shining seed, of a very bitter taste. The fruit is purgative; and, for medicinal use, far excels the bark. A decoction of it has been known to cure the venereal disorder, and even the yaws in its advanced state, without the use of mercury. The flowers, or blossoms, are composed of five petals, of a beautiful blue colour; from which is made a laxative syrup, resembling syrup of violets.

The fresh bark opens the body, and is deemed a great sweetener of the blood. Care, however, is requisite to moderate and temper the native acrimony of these medicines in the beginning of a course, and to prepare the body for the use of them.

The foliage is of a very detergent nature, and frequently used to scour and whiten floors, which it performs much better than soap. The infusion of them is also applied to wash painted linens, and other stained garments; which it is said to do very effectually, without diminishing the lustre of the dyes.

The tree, at its full growth, rises to the height of forty feet, and measures from fifteen to eighteen inches in diameter. There are none of this size now left in Jamaica, such multitudes having been cut down, either for clearing land, or for exportation. They are of slow growth, and are many years in attaining to maturity. The wood is heavy, and of close, tough grain; which recommends it as a very useful timber, especially for lintels, and out-door work.

It is certainly one of the most valuable trees in the West-Indies, since the body, the bark, gum, fruit, leaves, and blossom, are all of them applicable to some useful purpose. It may easily be propagated by the seeds, or fruit, and seems to love a dry soil and hot exposure.

The gum is commonly sold in the island at 2 s. 6 d. per pound weight, equal to 1 s. 9 $\frac{1}{2}$ d. sterling.

23. CASHEW, or CASHOU TREE. — *Anacardium*.

This tree is easily raised from the nut. It is of very quick growth, bearing fruit in two years after its being planted; and, in

good

good soils, spreads to the size of an English walnut-tree, which it much resembles in the shape and smell of the leaves ; and they are equally efficacious, in decoction, for cleansing and healing old ulcers. The fruit, or apple, has an agreeable, subacid flavour, with some degree of restringency. The juice, expressed from it, and fermented, yields a pleasant wine ; and, distilled, a spirit is drawn from it far exceeding arrack, or rum, which makes an admirable punch, and powerfully promotes urine. Some planters roast the ripe fruit at a fire ; and slice one or two into a bowl of punch, to give it a pleasant flavour. The restringency of the juice has recommended it as a very signal remedy in dropsical habits ; insomuch that many Negroes, labouring under this disorder, on being suffered to eat plentifully of the fruit, and of the roasted kernels, have soon recovered. The nut springs from one end of the apple : the outer shell is of an ash colour, and very smooth ; under this is another, which covers the kernel ; between this is a viscid, inflammable oil, of a reddish colour, extremely acrid, bitter, and caustic, which has been used with great success in eating off ring-worms, cancerous ulcers, and corns ; but it ought to be applied with caution. The kernel, when fresh gathered, has a most delicious taste, and abounds with a sweet milky juice. It is likewise an ingredient in puddings, and other agreeable preparations. When somewhat older, or after being kept for some time, it is generally roasted ; and in this state it is not so proper for costive habits. Ground with cacao, it makes an excellent chocolate.

These nuts are often sent as presents to Great-Britain ; but, after keeping too long, the kernel becomes shriveled, and loses its flavour and best qualities.

The tree annually transudes in large quantities, viz. from five often to ten or twelve pounds weight of a fine, semi-transparent gum, similar to gum-arabic, and not at all inferior to it in virtue and quality, except that it contains a slight astringency, which perhaps renders it, in many respects, more valuable ; for which reason, it is often used as a *succedaneum* in the Jamaica shops, and might answer equally well in Great-Britain, if encouragement was given to collect and remit it.

The

The thick oil of the nut, or shell, tinges linen of a rusty, iron colour, which can hardly be got out; and, if any wood be smeared with it, it preserves it from decay. If a proper method could therefore be fallen upon for extracting this oil from the shell, which at present is generally thrown away as useless, it would doubtless be applicable to various good purposes; for no worm would attack the wood, whose pores are filled with it. It would certainly be an excellent preservative to house-timbers, if not to ships bottoms, mixed with other compositions; though, for the latter operation, perhaps it might be difficult to obtain it in plenty sufficient, or at a price that would make it answer to the experiment. But, where a less quantity might be wanted, there is great probability of obtaining it; as the tree is so easily propagated, grows in almost any soil, bears luxuriantly, and lives to a very great age.

From the body of the tree is procured, by tapping or incision, a milky juice, which stains linen of a deep black, and cannot be got out again: but whether this has the same property with that of the East-Indian *anacardium*, has not yet been fully experimented; for the inspissated juice of that tree is the best sort of *lac* which is used for staining black in China and Japan.

Dr. Grew mentions the juice being used for staining of cottons: but it is doubtful which of the species he means; though Sir Hans Sloane supposes it to be of the *acajou*, or *cashew*, here-mentioned. However, it may be very well worth the trial. A few of the trees may be tapped in the bleeding season, the juice collected in earthen pots, kept in a place free from dust, or the pots covered with a linen cloth, to prevent dust from mixing with it; and, when of a proper consistence, experiments may be made to see if it has the same property with the Japan *lac*, which if it has, it may prove a valuable commodity [s]. It may be proper, for greater certainty, to vary the experiment; to expose some of the juice in shallow, wooden receivers, covered with a single linen cloth, to the heat of the sun, and reduce it to a consistence in the same manner as the aloes; or insipissate it in iron pots over a fire by gentle evaporation. If either way should succeed, a new and important article would be gained to the commerce of the island.

24. GUM-TREE. *Sapium*. Browne, 338.

This tree which is found in the Eastern and North-east parts of the island, yields plentifully a resin of the consistence of turpentine, which the planters of those parts use in their boiling-house lamps, and the wood of it makes hogshead staves, as I have already remarked in the description of St. Thomas in the East. The virtues and properties of this resin (any further than has been mentioned) are as yet unknown for want of experiment.

25. LOCUST-TREE. *Hymenæa*.

This tree, is not an *indigena* of the island, but introduced probably from the Southern continent, and was first planted in Liguanea [s]; the seeds obtained from it were afterwards sown in other parts, so that it is now common. It is very large and spreading, and of quick growth. It bears thick fleshy brown pods, shaped like those of the garden-bean, about six inches long, and two and an half broad, of a purplish brown colour and ligneous consistence, with a large suture on both edges. They contain three or four roundish compressed seeds, divided by transverse partitions, and inclosed in a whitish substance of fine filaments as sweet as honey. The Indians eat this substance with great avidity, though it is apt to purge when fresh gathered, but loses this quality after it grows old.

Between the principal roots of the tree exudes a fine transparent resin, yellowish or red, which is collected in large lumps, is called the gum *anime* of the shops, and makes the finest varnish that is known, superior even to the *Chinese lacca*; for this latter use it is dissolved in the highest rectified spirits of wine. It burns readily and with a clear flame, emitting a grateful and fragrant smell, for which reason it is sometimes ordered by way of fumigation in the chambers of persons labouring with asthma's, or suffocative catarrhs. Its vapours not only strengthen the head, but all parts of the body affected with cold. Some apply it outwardly, dissolved in oil or spirits of wine, to strengthen the nerves. An oil may be distilled from it, equally prevalent in all cold diseases, palsies, cramps, and

[s] I have been lately informed, that it was originally brought into this island, by the little colony removed from Surinam; who planted a great variety of seeds, and (among others) of this tree; particularly at the spot allotted to them, called *Surinam-Quarter*, in the parish of St. Elizabeth, where the species is now growing in vast abundance.

contractions of the sinews. The solution in spirits has been thought not inferior to gujacum in venereal cases, given in a dose of half a spoonful in wine, and sweating after it. A decoction of the leaves expels flatulencies, and gives ease in colicky pains, by gently opening the bowels; and the inward bark is an excellent vermifuge in substance or decoction. The wild bees are fond of building their nests in these trees; so that if we agree with the Dutch in opinion, that St. John the Baptist fed upon the fruit of them, we have no difficulty in supposing that he found the locust and wild honey, mentioned in scripture, on the same tree.

26. TAMARIND. *Tamarindus.*

This tree is exceedingly common in Jamaica, grows to a vast bulk, and thrives well in the savannah lands, but best in deep rich brick mould.

The fruit or pods are gathered in June, July, and August, attaining sooner to maturity in some parts than in others. The usual method of preparing the fruit for exportation is as follows. The pods are gathered when full ripe, which is known by their fragility, or easy breaking on a small pressure between the finger and thumb. The fruit taken out of the pod, and cleared from the shelly fragments, is placed in layers in a cask, and the boiling syrup from the tache or first copper in the boiling-house, just before it begins to granulate, is poured in, till the cask is filled; the syrup pervades every part quite to the bottom, and when cool, the cask is headed for sale. The more elegant method is, with sugar well clarified with eggs, till a clear transparent syrup is formed, which gives the fruit a much pleasanter flavour.

The East-India tamarind differs not from that of the West-Indies, but the pulp of the fruit is preserved without sugar, and exported to Europe in this form, which is better adapted for an ingredient in medicinal compositions.

The duty payable in Great-Britain upon the sugar-preserved tamarind is so high, that it cannot answer as a remittance; but if sent as a drug, that is, the pulp carefully separated from the seeds, put in jars, and well covered from the air by a covering of oiled paper, and waxed cloth, it might be a profitable article of remittance. The

duty on the sugar-preserved, being $6 \frac{1}{2} d.$; and on the raw pulp $1 \frac{1}{2} d.$ per pound weight; which is (per cwt.) on the former, $3 l. 4 s. 4 \frac{1}{2} d.$; and on the latter, only $17 s. 8 \frac{1}{2} d.$; or $2 l. 6 s. 8 d.$ difference.

The pulp would possibly be better secured from mouldiness, by giving it a gentle heat in an oven, by which the cruder parts may be evaporated, and the virtue of what remains not in the least diminished.

The wood of the tree is firm; and, fawn into boards, is converted to many useful purposes in building.

The pulp of tamarind, besides its purgative quality, temperates the acrimony of the humours, abates the heat of the bile and blood, quenches thirst, and is good in acute burning fevers. It corrects the fault of violent purgatives, and quickens those that are sluggish. It is frequently made an ingredient in punch, especially at sea, and never fails to open the body.

Mixed with decoction of borage, it is excellent in allaying the heat of urine.

A decoction of the leaves is said to destroy worms in children.

It is observed that the leaves close up at the approach of evening, or of cool moist weather, like those of the sensitive plants.

27. CASSIA-STICK TREE. *Caffia Fistularis.* Browne, 222.

With five pair of leaves, oval, spear-shaped, and smooth.

This tree grows in many parts of Jamaica, but is not indigenous.

The pods are from twelve inches to eighteen, and even thirty, in length, and about an inch in diameter. They consist of a woody shell, of a dark brown colour, hard but thin, divided within into several cells with transverse partitions; the pulp is soft, black, sweetish, and of the consistence of thick honey, and contains oblong, roundish, flattish seeds, that are hard, shining, and of a dusky yellow.

Those pods are best that are fresh, full, and will not rattle when shaken. The pulp is only in use which is taken from the pods, and passed through a sieve.

It is looked upon as a mild, inoffensive purge, agreeing with all sexes and ages.

In the West-Indies, the shell is observed to be thicker, and the pulp acrid; in which respect it differs from that of the East-Indies; and perhaps this is owing to a difference in soil and culture; in Jamaica the finest fruit is produced from trees growing in rich deep mould in some bottom or vale, warm, and well sheltered; it is not wonderful that the quality should degenerate, when no pains are taken in the cultivation of it.

The pulp of the *horse-cajua* is likewise a purgative, but so violent and griping in its operation, that it is never administered except to horses.

28. PRICKLY PEAR, or INDIAN FIG. *Cactus.*

There are several varieties of this plant in Jamaica; but the species I shall particularly refer to, are what is called the prickly pear, with broad fleshy leaves dotted with spikes; and the *cochineal-cactus*, whose leaves are larger, more succulent, and free from spikes. The former sort is abundant in all the South side parts of the island, growing in dry, hot, rocky situations, and in very sterile soils; the other seems not to be a native, and requires a better soil; but although this is probably the Mexican plant, called by some the [t] *opuntia maxima*, it is certain that the cochineal is found upon both species indifferently. It is well known that these plants bear a succulent fruit or berry at the extremities of their leaves, filled with a juice of delicate red colour, and agreeable taste. This juice is the natural food of the cochineal insect, which owes to it the value and property it possesses, as a dye in some of our principal manufactures. The *exuviae* and animal salts of the insect are, from the minuteness of its parts, inseparable from the essential principles of the dye; whence it follows, that such an heterogeneous mixture must necessarily destroy the brilliancy of colour inherent to the juice of this fruit; and that the juice itself, which alone contains the dying

[t] Neither the leaf nor fruit of this species have any prickle. The flowers are of a very beautiful red or crimson. This is generally called the *true cochineal plant*. The insect that feeds upon it is of a silvery colour, larger, more plump, and yields a greater quantity of the dye. The difference in point of goodness, observable in the cochineal, is entirely owing to the plant it feeds upon. The prickly plants, so abundant in Jamaica, are covered with the same species of insect; but not being the proper food for it, we find it in general diminutive, having very little red tincture in its body. I have seen several of the true cochineal plants growing in Longville Garden, in the parish of Clarendon.

principle, must, if unmixed and brought to consistence, yield a true perfect colour, lively and brilliant, as we find it in its natural state.

Upon this hypothesis Mr. *David Riz*, an ingenious gentleman of Kingston in this island, proceeded in several experiments, to obtain from the plant artificially, what nature accomplished in the insect, and at length happily succeeded by inspiſtating the juice; but the means he used are not yet communicated to the public. Encouraged by this discovery, he went to England with seventy-six processes differently manufactured, to try which would answer best as a substitute to the cochineal. After a great number of experiments, he found one process which communicated a crimson colour to silk and wool, superior to that given by cochineal; trials of which were made before a number of the principal dyers in and about London, at the museum of the Royal Society, invited there for that purpose. He also found two other processes, which promised, with very little alteration in their manufactory, to afford the colour-making dyes of scarlet and purple. Upon a moderate calculation it was found, that his colour would go further than three times the quantity of cochineal, which he accounted for by remarking, that there is a great part of the insect, as its skin, &c. which affords no dye, but that the whole of his process was genuine colour, with little or no impurity.

Notwithstanding the advantages that might be derived to the nation from this gentleman's discovery, he met upon the whole with very little encouragement to prosecute his manufacture further. It was said, that "our commerce with *Spain* would be hurt by it;" for this very reason it ought to have been encouraged. I am a stranger to the annual importation of cochineal from the Spaniards, but the quantity must certainly be very considerable, as it is so largely consumed in our fabrics and medical compositions; but whatever the quantity may be, it is evident that the process discovered by Mr. Riz gave promise of rendering the importation of that article wholly unnecessary; and as his colour, weight for weight, was found to go further in dying fabrics, than thrice the quantity of cochineal, a great saving would be made by the dyers themselves, and their fabrics would be afforded at a cheaper rate, all which makes

makes in favour of the national balance of trade. There is no doubt but the inventor, for a competent reward (of which he is well deserving), would have published the secret of his process; thousands of acres now waste in Jamaica might be cultivated with this plant, with little trouble or expence; and a quantity obtained answerable to the home demand.

The disappointment this gentleman met with, would intimidate me from proceeding further in the catalogue of productions, if I had not some gleam of hope remaining, that the endeavours of ingenious men in these remote branches of the empire may hereafter be more regarded, by the patriots of Britain, and the guardians of its commercial interests.

The fruit of this plant, eaten when it is ripe, is said to check fluxes by its mild restringency; it is also a powerful diuretic, and sometimes imparts a tinge to the urine; which furnishes a proof that the juice is not always altered with respect to the principles of its dye, by the animal salts and fluids with which it has to encounter in its secretion through the body.

Modern discoveries have shewn a chemical method of ordering the cochineal dye so as to retain a very great brilliancy of colour.

Drebel, a Dutch chemist, first invented the process of obtaining from cochineal, by means of a solution of tin in *aqua regia*, a bright and solid scarlet, exceeding in beauty and lustre any before produced. This however answered only for woollen stuffs. Monsieur Macquer discovered lately the method of dyeing silks, and cottons, or linen, in equal perfection, by a slight variation in the common process. He first dipped a piece of silk into a saturated solution of tin in *aqua regia*, somewhat weakened by the addition of a quantity of water, so small as to produce no precipitation of the earth or the metal. Having expressed the liquor from the silk, and afterwards washed it in water, in order to free it from any superfluous part of the solution, he dipped it into a decoction of cochineal quickened (as is usual in the dying of woollen cloths) with a small quantity of cream of tartar. The silk immediately took a full bright colour, which resisted all the tests or proofs usually employed on wool.

The dyers are therefore, it appears from this narrative, now possessed of the art of giving the cochineal dye a brilliancy, perhaps

somewhat nearer to that of the *cactus* juice; yet in all manufactures of this sort, it is certain, that the cheaper and simpler the dye is that is principally required, and the shorter and less laborious the process, the more useful and valuable it ought to be, esteemed; and therefore, without detracting any thing from the merit of Mr. Macquer's discovery, we must presume, that the preparation of the juice invented by Mr. Riz, which strikes at once the perfect colour with all the lustre that the dye naturally possesses, is, by reason of its simplicity, cheapness, and facility of the process, very far superior, exclusive of its being the production of a British colony, and obtainable with a vast annual saving to the national stock of riches, and general balance of trade.

The juice of the fruit is probably reducible to a consistence, by exposure to the air and sun, like the juice of aloes; but the difficulty was, to fix and render it undischargeable (without injury to the colour), from the principles of the mixture with which it is combined for the dyer's purpose; and a process to this effect constitutes the chief merit of the discovery made by Mr. Riz.

The other species of the *cactus* have nothing of a remarkable utility except the torch thistle, or *cactus major erectus*, which, when it grows old, is hollow within, or rather containing a tubular network; in this state it will burn like a candle; the Indians on the continent are said to fill it with a bituminous substance, and thus make an excellent kind of flambeaux.

The present price of cochineal, in London, is about 19*s.* 6*d.* sterling *per* pound.

29. SCARLET-SEED. *Arbor Sloaneæ Species.* Browne, p. 368.

This shrubby tree is frequent in the Red-Hills near Spanish Town, about six to seven inches diameter, about twelve or sixteen feet height, and grows pretty luxuriantly. When the fruit is ripe, it bursts upon the tree and sheds its seeds, of which the smaller birds seem very fond; they are enveloped in a greasy waxy substance of a scarlet colour, which may probably serve both for the dyers and painters use, when better known.

30. { ALLIGATOR-WOOD; { — *Elutherium*. Browne, p. 369.
or MUSK-WOOD. { — *Lauro Affinis*, *Ligno Moschum*
olente. Slo. Cat. p. 137.

This tree is frequent in the midland woods, and grows to a considerable size. All parts of it, but especially the bark, smell strongly of musk [*u*], and may be used instead of that perfume for many purposes. A small piece of the bark put into a pipe of tobacco and smoaked, will scent a room immediately. As the wood grows old and dry, it loses this odor, but the bark continues to retain it. The wood is full of a bitter, resinous substance, which renders it unfit for rum-puncheons, being observed to communicate both its smell and taste to all spirituous liquors. But it is often cut for *staves* and *heading* for sugar hogsheads, when there happens a scarcity of other lumber. Some old Negroe-women are extremely fond of perfuming their persons with the powdered bark, till they smell like civet-cats.

There is no doubt but the resinous parts of this tree contain a volatile odoriferous oil, and that this as well as the resin itself, which is soluble in spirits, might be converted to many useful, and probably medical purposes.

31. AMERICAN NUTMEG.—*Arbor moschata vel myristica Americana.*

This tree was first planted at Mr. Beckford's plantation, called The Retreat, in Clarendon; the seeds, from which it was produced, were probably brought from the South American continent. It bears a considerable number of large round pods resembling the calabash, hanging from the branches by a long pedicle. The pods are from four to five inches diameter, and contain a multitude of nuts or kernels, of about one inch in length, and one third of an inch in thickness, all packed close in a very singular regularity, so that after displacing them, it is impossible to restore them to the same order and compactness as before. These kernels, when thoroughly dried, are of a light, reddish, brown colour, impregnated with an aromatic oil resembling that of the Eastern nutmeg, from which they differ so little in flavour and quality, that they may be used for similar purposes in food or medicine; the only perceptible

[u] Resembling that of the *alligator*—whence its name.

difference:

difference to the taste, is, that they are less pungent than the East-Indian nutmeg. It was a long time before the tree at The Retreat bore fruit; at the time of its bearing it was about eighteen feet in height. It has since been cultivated by many gentlemen in different parts of the island, and may probably in a few years be adopted into general use, as well as furnish an article of export. I take it to be the same as that found in Guiana. When intended for exportation, it might be adviseable to send them in the dry pods entire, or lay the kernels in lime-water for a little while, drying them afterwards again in the sun, or a shady place.

32. INDIGO-BERRY.—*Randia*.

The shrub of this name is frequent in the low-lands, and chiefly in the more barren clayey soils, rises to the height of seven or eight feet: the main stem tough and hard: the branches somewhat prickly at the ends: the leaves of an oval or roundish form, growing in tufts. The berries are round, grow very numerous on the smaller branches, and contain a thick pulp, which stains paper or linen of a fine fixed blue colour, which stands washing either with soap or acids; but does not communicate so fine a colour with heat. If it was brought into cultivation for the sake of this property, an excellent blue tint might be obtained from it for painting.

33. SILK COTTON TREE.—*Bombax*.

The stupendous size of these trees has attracted the notice of most travelers in the West-Indies. They have been known to rise to upwards of one hundred feet in height, tapering from the base, and are frequently seen from fifty to eighty feet length of shaft, measured to the first insertion of the lower arms or branches, and from twelve to fourteen feet circumference. The wood is light and porous, and makes excellent canoes. In Columbus's first voyage it is said, there was a canoe seen at Cuba made with one of these trees, large enough to contain one hundred and fifty men. They are frequently known to carry from fifteen to twenty hogsheads of sugar, of from twelve to sixteen hundred weight; the average of which is about twenty-five tons burthen. When fawned into boards, and these afterwards well saturated with lime-water rubbed into the pores,

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the wood bears exposure to the weather for many years; it is also formed into laths for roofs, curing-pots, and hogshead heading. The leaves when young and tender are very mucilaginous, and boiled by the Negroes as greens, in their *pots*. The pods are pyriform, upwards of six inches long, and proportionably thick in the biggest part, tapering towards the pedicle like the pear kind. This fruit when ripe bursts open in five divisions, and shews a dark cotton, of a soft silky texture, inclosing a number of roundish seeds. It has been supposed that this substance might be rendered useful in the hat manufacture. It is sometimes used for stuffing pillow-cafes, and seems to possess the elasticity of the *eider-down*, as soon as it is impregnated with the warmth of the body; but it is thought unwholesome for West India beds, as it is apt to excite too strong a perspiration; it might probably answer better for winter coverlids in Great Britain. Whether it has a sufficient staple to be mixed to any advantage in fabrics of the loom, experiment must determine.

The larger canoes are generally sold for 50*l.* to 60*l.*, and the smaller 10*l.* to 30*l.*, Jamaica money. Those of largest size are called *petaiguanas*.

When the tree decays, it becomes a nest for the *macaca beetle*; whose caterpillar, gutted, and fried, is esteemed by many persons one of the greatest delicacies in the world.

The bark of the root has been sometimes used with success as a vulnerary and sub-astringent; and the seeds are administered in emulsions, and pectoral infusions.

The *down-tree* is another species, and varying in many respects, not exceeding 30 feet in height, and having large spreading, roundish, scalloped leaves, growing at the extremity of very long foot stalks. The pod is likewise differently formed, being longer, larger, blackish, compressed, and channeled longitudinally; producing a cotton of much better staple, which has been used for stuffing beds and mattraffes, and seems well adapted to the loom. They are probably from the South American continent, for they are not common in Jamaica. They are found at Oake's plantation in Clarendon, on the banks of the river Pindar, and some other parts; and might easily be propagated from the seeds. If the species is the same as that of the Spanish continent, it is certainly capable of being manufactured; since the Indians spin and work the cot-

ton of their trees into garments. This species in South America is thus distinguished:

Bombax, foliis quinque-angularibus, villosis, caule geniculato, herbaceo.
Silk-cotton, with five-cornered, hairy leaves, and a jointed, herbaceous stalk.—In Jainaica it blossoms in the month of November.

34. PINGUIN. — *Bromeliæ species.*

This useful plant has been classed with the *ananas* or pine apple, from the resemblance of the leaves, tho' it is so distinct from it in every other respect, that it seems rather to be a different genus. It is common in every part of the island, being generally used for fencing pasture lands, planted on banks, and answering this purpose extremely well, as the prickly edges of its leaves, arched backwards, are very formidable to cattle. The leaves being stripped of their pulp, soaked in water, and then beaten with a wooden mallet, until the exterior coat is discharged, yield a strong thready substance, or collection of fine fibres, not inferior to hemp, which is commonly twisted by the Negroes into cattle-ropes, and wain-whips. Among the Spaniards it is manufactured into hammocks. An ingenious gentleman, of this island, sent a small quantity, a few years since, to North America for experiment, where it was worked into linen cloth, of an excellent substance and texture. The flower of this plant is exquisitely beautiful, being composed of red, blue, and purple colours, variously intermingled, and surrounded with glossy leaves of scarlet, orange, and green, with some mixture of white. The fruit contains a very sharp, acid juice, a small quantity of which dropped into water, makes an admirable cooling draught in fevers; a tea-spoonful of it, corrected with sugar, destroys worms in children, cleanses and heals the thrush, and other ulcerations in the mouth and throat; it is extremely diuretic, and in a large dose is said to cause abortion; it makes a very fine vinegar.

35. COCOA-NUT TREE. — *Palma Indica coccifera.*

This tree is planted in most parts of the island, both for its beauty and productions. It thrives equally well in the low-lands as in the mountains, rises to the height of 50 to 60 feet, and flourishes remarkably on the very margin of the sea, planted in the sand with a little mould. It is produced from the nut, which bears transplanting extremely

tremely well, though rendered more vigorous by mixing salt with the earth into which it is removed.

The substance which incloses the shell is made up of tough fibres, of which the Indians make not only cordage, and other tackle for ships, but a kind of oakum for caulking, which is highly extolled. Steeped in water, and beaten like flax, it is manufactured into an excellent linen. After this coat is taken off, the shell makes its appearance, which takes a fine polish, and is often formed into drinking cups, set in silver. The shell is filled with a very agreeable, sub-acid, cooling fluid, while young; but as the fruit advances, this concretes into a gelatinous coat adhering to the inside of the shell, hardening with age, till it acquires a firm texture, when it resembles an almond in flavour, and makes part in various preparations of the kitchen; it contains a large portion of oil, is wholesome and nourishing.

The liquor is generally esteemed highly antiscorbutic, one of the pleasantest drinks in America, and makes a salutary emulsion in fevers; it is also added in the distillation of rum, and thought to improve the flavour of that spirit.

The leaves of this tree are used for *thatch*, and the tender shoots at the top afford an agreeable green, or cabbage. The trunk is formed into gutters, and occasionally employed for inclosing, and roofing out-houses, and, being nailed close, is so hardy as to resist the weather for many years. The juice, obtained from the trunk by tapping, mixed and fermented with molasses, affords an excellent spirit. In order to make arrack from it, the tree must be kept from bearing fruit: for this purpose, the sprout which produces the nut, and which shoots every month, is cut, and jars fastened to it to receive the liquor; or the body is bored, and a plug put into the orifice, which is occasionally taken out when the liquor is wanted: this liquor is suffered to ferment, and whilst it is in this state, it is distilled into the spirit called arrack, which far excels what is drawn from rice. If this liquor is exposed to the sun, it soon turns to vinegar; it must therefore be carried, immediately after it is collected, into a shady place.

Near the base of the larger branches or foot-stalks, is a web-like *plexus*, composed of fibres curiously interwoven by the hand of nature, which is the cloathing this tree is said to afford; and is often used in this island for strainers.

Considering this variety of productions, those writers have not been guilty of much exaggeration, who assert, that it furnishes meat, drink, physic, cloathing, lodging, and fuel.

36. PALM-TREE, or OILY PALM. — *Palma fructu luteo oleosa.*

This tree is not so frequent in Jamaica as it deserves, being chiefly cultivated by the Negroes only. The nuts are covered with an oily pulp; when they are roasted, it tastes very much like the outside fat of roasted mutton. The oil is obtained by boiling the nuts in water, when the oleaginous particles rise to the surface, and are skimmed off, and strained for use.

The Negroes are fond of this oil, which sometimes makes an ingredient in their food; but they oftener apply it by way of embrocation, for strains, or to discus rheumatic aches, for which purposes it is very efficacious.

37. GREAT MACAW TREE. — *Palma spinosa major.*

The fruit of this tree, as well as that of the smaller macaw, is full of oil. The Negroes affirm this to be the tree which yields the true palm-oil. They make necklaces of the woody part of the seeds, which are black, round, flat, and about the size of what is called here the horse-eye-bean, covered over with a yellow pulp, of which the macaw bird is excessively fond.

The outer coat of the body of the tree is remarkable for its solidity and toughness; which qualities recommended it to the Indians, who used to make their bows, and several other utensils, with it. The inside, or heart, is full of a pithy, farinaceous substance, resembling that of the cabbage tree.

38. LESSER PALMETO, or THATCH TREE. — *Palma non spinosa minor.*

The body of this tree is much used in piling for wharfs or buildings, having been found to stand the sea-water very well, uncorroded by length of time, or the worm, which is not able to penetrate it.

The foot-stalks of the leaves are tough and flexible, serving, when they are split and pared, to make baskets, bow-strings, chair-bottoms, and many other conveniences; and the foliage is thought to afford the

best, and most durable, thatch. There are immense groves of them in the leeward parts of the island.

39. LARGER PALMETO. — *Palma non spinosa major.*

The trunk and foot-stalk of the leaves answer the like purposes with the former, but esteemed, if any thing, to have superior toughness.

40. PALMETO-ROYAL. — *Palma Brasiliensis, caudice squamato, folio plicatili seu flabelli-forma* — Brasilian Palm, with a plaited or fan-shaped leaf, and a scaly stalk.

This is much larger-bodied and taller than the other palms. It has been suspected, that the Spaniards obtain the gum called *caranna* from the trunk of this species, which is celebrated as a vulnerary and cephalic. This gum is hard, resinous, and of a dark olive colour, inclining to green, of a sweet smell, and somewhat aromatic flavour. When fresh, it is ductile as pitch; and, kindled, yields a fragrant odour. It is sold at Carthagena, wrapped in plantain leaves; but the manner of collecting it is carefully kept secret.

This tree is frequent in Jamaica, particularly in the savannahs of Clarendon. The leaves are circular, and when divided through the middle to the extremity of the stalk, which is thick and ligneous, they form two fans, each being of about two feet diameter; these, when dried, and stained with different colours, are commodious instruments in hot countries, and very much used in the Spanish dominions. The leaves are a good thatch, especially those of the younger plants; and from the larger ones are made hats, small baskets, and other utensils. The trunk of this tree is bullet-proof; and, cut into stockadoes, makes an excellent inclosure, equal to a stone-wall in resisting the attacks of an enemy.

41. PRICKLY POLE. — *Palma spinosa minor.*

This tree bears small, round, red berries, containing a sweet yellowish pulp, of a very pleasant taste; the wild hogs and pigeons eat them with great avidity. The outward part of the trunk is extremely tough and elastic, of the colour of black ebony, and capable of a very high polish, resembling whalebone.

It is used for launces and ramrods, and may be converted to various other uses, such as knife handles, &c. It is so hard, that the Indians used

used to make their arrow heads with it, sharpened to a fine point, which was almost equal to iron. The prickles of this species, and the macaw, in their native state, are very elegant toothpicks, and require only an eye to serve the purpose of needles for coarse work. The Indians formerly are said to have used them for a very inhuman purpose: after tying their prisoners of war to some tree, they took these thorns, and wrapping them in little pellets of cotton dipt in oil, stuck them into the sides of the miserable sufferers, till they were bristled like hedge-hogs.

42. DATE TREE. — *Palma major*, seu *Phænix dacrylifera*.

This tree has been cultivated in some few gardens, and seems to agree extremely well both with the soil and climate. The fruit is undoubtedly nutritive, as it constitutes no inconsiderable part of food among the Asiatics. In Africa it grows naturally, and from thence probably the seeds planted here were obtained. Most authors affirm, that, unless the female or fruit-bearing trees have the assistance of the male, they are unprolific. In such places, therefore, where there are no male trees near the female, the inhabitants cut off the bunches of male flowers when they are just opened, and, carrying them to the female trees, place them on the branches of the female flowers to impregnate them, which they say has the desired effect, rendering those trees fruitful, that would otherwise have been barren. The flowers of the male have six short *stamina*, with narrow four-cornered summits filled with *farina*; the female flowers have no *stamina*, but have a roundish *germen*, which afterwards becomes an oval berry, with a thick pulp, inclosing a hard oblong stone, with a deep furrow running longitudinally. The bunches of fruit are sometimes very large. Those dates are esteemed the best, which are large, soft, yellowish, with few or no wrinkles, and full of pulp, either of a good white throughout, or else reddish towards the surface, and white towards the kernel.

They are preserved in three different ways; some pressed, and dried; others pressed more moderately; but the best are those not pressed at all; only moistened with the juice of other dates, as they are packed up in baskets or skins.

In regard to their medicinal virtues, they are said to strengthen the stomach, stop loosenesses, and corroborate the intestines; they are also good in diseases of the breast, and promote the expectoration of gross humours;

humours; they are used for this intention sometimes in pectoral decoctions. They are recommended likewise in the piles, taken in red wine.

The import duties on this article have no respect to what may be produced in our own colonies, but we can scarcely hope that it will be so extensively cultivated here, as to become an article of remittance to Great Britain.

There are some in a garden at Spanish Town, which bear every year; and it is to be regretted, that their fruit is not dispersed and planted annually in different parts of the island, more especially in those where the macaw, and other palms, naturally flourish; as the soil in such parts is probably best suited to the date also. Without carrying the view so far forward, as to its becoming a commodity for export, it is worth cultivating for the sake of the beauty of the tree, and the possession of the fresh fruit for the use of the inhabitants.

In Upper Ægypt many families subsist almost entirely upon the fruit. The Ægyptians make a conserve of the fresh dates, mixing them with sugar; this has an agreeable taste. The stones or kernels are as hard as horn, and nobody would imagine that any animal could eat them; but the Ægyptians break them, grind them in their hand-mills, and, for want of better food, give them to their camels, which eat them. In Barbary, they turn handsome beads for *Pater noster*s of these stones. Of the leaves they make baskets, or rather a kind of short bags, which are used in Turkey on journeys, and in their houses. In Ægypt they make fly-flaps of them, and brushes to clean their sofas and cloaths. The hard boughs they use for fences about their gardens, and cages to keep their fowls in, which they carry to market. The trunk or stem is split and used for the same purposes as the branches; they even use it for beams to build houses, as it is strong enough for small buildings. It is likewise used for firing, when there is want of better; the wood is soft and spongy, and burns well. The web-like integument covering the tree between the boughs has threads, which run perpendicularly and horizontally crossing each other, in the same manner as that of the cocoa-nut tree: this is of considerable use in Ægypt, where they make all their ropes and rigging of the smaller vessels with it. It is esteemed strong and lasting [w].

[sv] Hasselquist.

43. BARBADOES CABBAGE TREE. — *Palma caudice ad infimum turgido.*

44. JAMAICA CABBAGE TREE, or MOUNTAIN CABBAGE. —
Palma caudice æquali.

These trees are in fact, I believe, the same species; and the difference between them in respect to their figure seems to be owing entirely to the situation in which they grow, whether in open ground, or in the midst of woods. In the former case, nothing hinders them from assuming that graceful form peculiar to their nature; in the latter, being inclosed on all sides with other lofty trees, they rise spindling, and often crooked; and seem to be confined in their growth to a continual ascent, preserving an uniformity of bulk in the shaft from the root upwards, until they have overtopped the whole wood.

The Barbadoes cabbage, which is planted here for ornament, is one of the most beautiful trees in the world. No limits seem to be set either to its age or ascent. Ligon mentions some at the first settlement of Barbadoes, above 200 feet in height. And Ray speaks of another of 270 feet, or thereabouts. One hundred feet is a very common height. It is propagated from the seeds. The upper part of the trunk, from whence the foliage springs, resembles a well-turned, finely polished baluster, of a lively green colour, gently swelling from its pedestal, and diminishing gradually to the top, where it expands into the branches, elegantly arranged, and waving like plumes of ostrich feathers. From the center of the summit rises the spatha or sheath, terminating in an acute point. The trunk itself is not less graceful, being a straight, smooth, slightly annulated column, large at the base, and tapering from thence to the insertion of the baluster or cabbage. This tree is so much reverenced for its majestic form, that it is not destroyed like the others for the sake of the cabbage.

The Jamaica mountain cabbage is cut for this purpose; and the cabbage stripped of its outer green coat appears perfectly white, cylindrical, and formed of several concentric *luminæ*. The inner tunics are sliced, and either eaten raw, with onions, pepper, and vinegar, or boiled, and served up with butter; in which way, it most resembles the European cabbage in flavour; or converted into a pickle, in which state it is sent to Great Britain.

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The outward texture of the trunk of these trees is used for laths, and other purposes. The spathæ are made into mats by the Negroes. The leaf is composed of longitudinal filaments, or thread-like fibres, which, being properly separated, are spun like hemp, and formed into twine and cordage.

The tunicles are extremely thin, and may easily be exfoliated and dried; after being prepared in this manner, they may be wrote upon with a metallic pencil or *fylus*; and will retain the characters so long as the substance lasts, which may be as long as vellum, if care is taken to keep it dry; for this property, it seems to resemble the *papyrus* of the ancients. The best cabbage is obtained from this tree when it is young, and not above 15 or 16 feet in height. From the real summit of the stem spring two branches full of small flowers; these are followed by small round berries, about the size of a hazel-nut, which are devoured by the birds, who mute the stone or seed, by which means there is a continual nursery of these trees, which otherwise would soon be extirpated; for whenever they are cut down, no fresh shoot arises again from the root; and whenever robbed of their top or cabbage, they cease from growing. The external coat of the trunk is impenetrable to a musquet ball, though it is scarcely an inch thick. The Spaniards are said to have cased their buildings in the country parts with this covering, which made them defensible against enemies, and equally proof against the assaults of earthquakes and hurricanes.

Within this hard integument is a pithy, farinaceous substance, similar to some other of the palm kind.

Dampier, speaking of the trees growing in the island Mindanao, one of the Philippines, mentions a species called by the natives the *hbby*. This tree is not unlike the cabbage, the bark and wood hard, and inclosing a white pith. They cut down the tree, and, splitting it in the middle, take out the pith, which they beat well in a mortar; then put it into a sieve made from the same tree, and, pouring water upon it, stir it about, till the water carries the mealy part through into a trough placed underneath. After it has stood till it has settled, they pour off the water, and, taking out the sediment, and drying it, bake it into cakes; this meal they call *sago* or *sagu*, which is exported to other parts of the world, dried in small grains like confits.

In Java it is called *bulum*, and according to Linnæus is made of the pith of the *cycas circinalis*.

In the Moluccas the tree is called *laudan*, the pith of which furnishes them with this soft meal for bread, as the leaves serve them for the covering of their houses; and the larger veins for rafters, as the lesser make good cordage; while these leaves are young, they are covered with a kind of woolly substance, which affords materials for stuffs. They resemble the cocoa trees.

From these descriptions there is reason to believe that the sago tree is of the palm kind, as it bears affinity to those of the West Indies in most respects.

The ingenious Mr. Robinson, whom I have before-mentioned, was of this opinion, and resolved to make some experiments upon this ground.

He took the pith of the mountain cabbage, caused it to be pounded, and the mealy part passed with water through a coarse cloth laid in a sieve. The experiment succeeded to his wish; he obtained a fine white meal in large quantity, which, in the judgement of many persons who tasted it, surpassed in goodness what was imported. It was in the form of an impalpable powder, and in this state boiled to a thickness much sooner than the common sago. That which comes from the East Indies is probably granulated by means of some gum intermixed with it; and the art of bringing it into a granulated form, is all that remains for perfecting the Jamaica manufacture; for Mr. Robinson doubted, whether in powder it might keep so long as in the granulated form, but there is no certainty that it would not.

This is a manufacture which might easily be entered upon, to some extent, in Jamaica, if necessary; and more particularly by settlers in the interior parts, where these trees are so abundant; at least, it may be of service to them to be informed of the means, by which they can furnish their families with so nourishing and restorative an aliment, with very little trouble.

45. MAHOE, OR BARK TREE. — *Althaea maritima arborescens*.

This tree is frequent by the sea side, in many parts of the island, particularly about Portland Point, and the coasts of Vere. It bears a yellow flower. The bark is exceedingly tough, and not inferior to hemp or flax in utility and strength. It is naturally white, and of a fine, soft, filamentous texture; which recommends it as very fit for the paper-mill. Ropes are made of it for plantation use, which, if they

were tarred and well twisted, would be equal to those made from the best hemp. All the parts of this tree, especially the flowers, abound with a mucilage, emollient, and laxative.

46. SMALLER MAHOE. — *Althaea frutescens aquatica*.

This is generally found in marshy places, and on the banks of rivers. It bears a small yellow flower. The bark is not so strong as that of the former, but the Negroes use it to tie up their bundles of Scotch grass, and sometimes twist it into ropes.

47. MOUNTAIN MAHOE. — *Hibiscus arboreus*.

This tree grows to a considerable size, and is frequent in the woods. It bears a large open yellow flower, not unlike those of the yellow lily. It is generally reckoned an excellent timber tree. All the tender parts of it are mucilaginous, and used upon occasion for the same intention as the other medicines of this tribe.

There is another species, which bears a red flower.

48. BUR-BARK. — *Triumfetta*.

This plant is frequent in the island, and rises to the height of six or seven feet in a rich moist soil. The bark is tough and strong, and serves for ropes, and other conveniences of the like kind.

49. PRICKLY-BARK TREE. — *Hibiscus arboreus, foliis sub-rotundo angulatis*.

This is rare in Jamaica. It is found in the woods of St. Anne. The inward bark is very tough, and fit for ropes; but it is coarser and more fibrous than that of the mahoe.

50. LAGHETTO, or LACE-BARK TREE. — *Frutex foliis majoribus*.

It has a laurel-like leaf, and therefore called by Sloane *arbor lauri-folia*. It is common in the woods of Vere, Clarendon, and St. Elizabeth. The inner bark is of a fine texture, very tough, and divisible into a number of thin filamentous *lamina*, which, being soaked in water, may be drawn out by the fingers into a *reticulum*, resembling fine lace so nearly as to be scarce distinguished from it.

The ladies of the island are extremely dextrous in making caps, ruffles, and compleat suits of lace with it; in order to bleach it, after being

drawn out as much as it will bear, they expose it stretched to the sun-shine, and sprinkle it frequently with water.

It bears washing extremely well, with common soap, or the coratoe soap, and acquires a degree of whiteness equal to the best artificial lace.

There is no doubt but very fine cloaths might be made with it, and perhaps paper. The wild Negroes have made apparel with it, of a very durable nature.

The common use to which it is at present applied is rope-making. The Spaniards are said to work it into cables; and the Indians employ it in a variety of different fabrics. It may, perhaps, be of service to Great Britain as a manufacturing nation, that the inhabitants of these colonies are very seldom disposed to improve what nature offers, or apply many productions here to the obvious uses for which they are intended. Necessity, that great spur to such improvement, is wanting to stimulate; or otherwise, they would soon find out methods of turning them to account.

51. BONACE-BARK. — *Arbor cortice fijo, foliis oblongis, &c.*

Browne, 372.

This tree is common near Montego Bay, where it grows to a moderate size. The bark makes very good ropes; it spreads or dilates like the Laghetto bark, but neither altogether so free nor regular.

52. WHITE-BULLY TREE, or GALIMETA Wood. — *Salicis foliiflato arbor, &c.* Slo. Cat. 170.

Achras, 8. Browne, 201.

This tree is most usually found in the low-lands, especially about Liguanea and Manchineel. The bark of it answers all the purposes of the Jesuit's bark in robust constitutions, when the disease proceeds from a weakness of the *viscera*, and a gross undigested chyle. It is a safe and convenient medicine to be administered in Great Britain; but thought not so safe nor proper in Jamaica, where those fevers that generally put on the appearance of intermittents, are attended with nervous symptoms, and require more active and stimulant medicines; for which reason the Jesuit's bark is preferred for use in this island. But as the Jamaica bark is found to answer, as a strong astringent, all the purposes of the Jesuit's bark in the British climate; and the latter is a

very

very expensive medicine, being often retailed at half a guinea a pound, the Jamaica bark would form a good substitute, and be found equally effectual as the other in the intermittents, most prevalent in that climate.

After the great fire, which destroyed Port Royal in 1703, Jesuit's bark became so scarce in Jamaica, that few practitioners could procure any; upon which they had recourse to the galimeta bark, and administered it with good success, but were obliged to encrease the dose to a much larger quantity. Not long after they found out another bark, which answered every purpose of the Jesuit's; this was the

53. LOCUS, or LOTUS-TREE.—*Loti arboris folio angustiore, rubro flore, fructu polyspermo, umbilicato.* Sloane, Cat. 162. Qu? *Acbras 4 of Browne*, p. 201. Beef-wood?

It has a very beautiful reddish flower, the fruit round, and about the size of the American *clammy-cherry*, or *malpighia*; of a yellowish colour, and agreeable taste; and contains a stone, or seed. The bark, taken from the limbs and smaller branches, is of the same complexion, in all respects, as the *Peruvian quill bark* (which is esteemed the best) and cures intermittent fevers equally as well, as has been often experienced. There is another species, the flowers of which are more yellow, and the fruit much smaller, but of the same nature.

54. BLACK-OLIVE, or BARK-TREE—*Buceras.*

This tree is a native of the lower swampy lands, and grows to a considerable size. It is the same as the French oak of Antigua. The bark, mixed with that of the mangrove tree, is much esteemed for tanning leather; and an excellent styptic water may be made from it. The wood of the tree is a very fine timber.

55. BUTTON-TREE, or BUTTON-WOOD—*Conocarpus edulis Br. p. 159. Alnifruetum laurifolia arbor, Sl. Cat. 135.*

This tree grows luxuriantly in all low sandy bays and marshes round the island, and may be propagated by slips or cuttings; the bark tans leather well; the fruit is drying, binding, and healing.

56. YAW-

56. YAW-WEED, or upright WOODBIND, or HONEY-SUCKLE, with oval leaves—*Morinda*, an *Periclymenum*?

There are several species of this plant; it is common in the low-lands, and frequently found climbing among the bushes in all the lower hills; one of them, which rises to the height of twelve feet, and bears scarlet flowers, is supposed to be the *Chili itiu*, or *periclymenum*, used by the Indians in dying. The roots of all these species, boiled, colour linens of a dark hue, and probably might be a useful ingredient among the dyers; for they will make a tolerable ink: and it is affirmed, that the colour is so permanent, it cannot be washed out.

The *periclymenum* of Jamaica, with round bunches of flowers at the end of the branches, and oval leaves, growing in whirls, with foot stalks, the flowers of a coral-colour, seems to approach nearest in affinity to that of *Chili*. It rises with a shrubby stalk, ten or twelve feet high, sending out many slender branches, covered with a light brown bark, and garnished with oval leaves, near two inches long, and one inch and a quarter broad; four of them coming out at each joint, in whirls round the stalk; they stand upon short foot-stalks, and have one strong mid-rib, with several veins running from the mid-rib to the sides. The flowers appear in round bunches at the end of the branches; they are of a deep coral colour on their outside, but of a pale red within.

That of *Chili* agrees in most points, except that the bark is greyish, the leaves are pointed, and the flowers are succeeded by oval berries, the size of small olives, and are cut into four segments at the top.

Some varieties may happen in plants of the same *genus* from soil and climate; but as all of this class in Jamaica are found to possess this dyeing quality, in some degree, so the superiority may be decided by skilful experiment; and there is no doubt, but these roots may become a valuable addition to the articles proper for export, if, upon trial, they are found not to lose their quality, by moderate keeping, or in their dry state.

57. SWEET-WOOD, or SHRUBBY SWEET-WOOD—*Amyris*.

Professor *Linnæus*, having obtained a specimen of the balsam of *Mecca* tree, was of opinion, that it was a species of this *genus*.

Mr.

Mr. *Robinson*, pursuing this hint, found three species, differing only from each other in the size of the trees, dimensions of their leaf, and greater or less *aroma* of their bark and wood.

They grow in great abundance on the rocky hills of the Southside coast, and other parts more inland; and are remarkably frequent in Healthshire, in St. Catharine.

Their leaves and bark are impregnated with a fine, balsamic juice, and, if the body was tapped at the proper season of the year (supposed to be August) might be found to transude a thick liquor resembling that of the Gilead balsam, to which the taste of this bark, and wood of the smaller branches, bears a very exact relation.

The leaves, infused in boiling water, after the manner of tea, have a very pleasant flavour, and odoriferous scent, and may be drank with milk and sugar, instead of tea.

This infusion is highly cephalick, strengthens the nerves, and is particularly restorative to weak eyes; insomuch, that I knew a gentleman, who, by the constant use of it for some weeks by way of breakfast, was able to read a small print, and view objects distinctly, without the assistance of spectacles, which he had been unable to do for some years before.

The leaves, dried thoroughly in the shade, might be very securely packed, and exported, for further trial of their virtues, which, in Jamaica, did not seem to be impaired by their drynes, or length of keeping.

There is then the strongest reason to believe, that the *amyris* may, by incision, produce a balsam, not much inferior to the celebrated balm of *Gilead*, or *opobalsamum*; which, for better information of the inquisitive reader, I shall here describe, from competent authority. It is a liquid resin, of a very light yellowish colour, and a fragrant smell, not unlike that of citrons; but the taste is acrid and aromatic. It is pellucid, tenacious, or glutinous, sticking to the fingers, and may be drawn into long threads. It scarcely ever becomes fluid or liquid, by the heat of the sun, in the westerly part of Afian Turkey, where it is produced.

Its virtues are said to be these. It is one of the best stomachics known, if taken to three grains, to strengthen a weak stomach. It is
a capital

a capital vulnerary ; for, if applied to a fresh wound, it cures it in a very short time.

When fresh, it is said to have a much greater efficacy, than when old.

It is given internally against putrefaction of the *viscera*, and abscesses of the lungs, liver, and kidneys. It also cleanses foul ulcers, and heals them very soon. But it is difficult to obtain it unsophisticated ; for which, and other reasons, it well deserves the experiment of ingenious gentlemen in this island, to find if a balsam, or resin, be obtainable from the *amyris*; since the discovery would naturally lead to form such a substitute for the true balsam, which is so seldom to be got in its genuine state ; and there seems no weak ground for presuming, that this substitute would answer similar good purposes in medicine.

58. CALIBASH—*Crescentia*.

This tree grows universally in Jamaica. The wood is very tough, and fitter for the coach-makers use than any other sort of timber known. The shell of the fruit resembles a gourd, is of various size and capacity, from an ounce to a gallon ; and is used by the Negroes to hold water, or rum. It is thin, but of a close, firm texture, and serves to boil water, or even broth, as well as an earthen-pot. The thicker and more substantial parts are frequently scooped into button-moulds, in all the West India islands. The Negroes supply themselves, from this tree, with very convenient, and not inelegant, cups, saucers, bowls, punch, and other ladles, spoons, and other utensils, of various shapes and sizes ; upon some of which they bestow the best carved work in their power.

They steep the seeds in water, which makes a tart, cooling beverage. With the pulp they cure burns, applying it in form of a cataplasm, and renewing it every six hours.

The pulp of the green fruit is said to cause abortion, and even to make cows and mares cast their young ; for which reason they are carefully kept from eating of it in dry seasons ; at which times only they are prompted to it, by scarcity of other food.

59. WILD-CANE.—*Arundo Indica*, Bambu species.

This grows in all the river courses throughout the island. It is full of pith, and resembles the oriental *bambu* in every respect, but dimensions. The foliage, when dried, is used for thatch. The tender tops of the young plants, gathered after they just spring out of the ground, are boiled, and made into an agreeable pickle. The stem or cane is used for wattles or laths, for covering the walls, ceiling, and roofs of buildings; and, if smoak-dried over a fire, previous to their being employed for these purposes, will last undecayed so long as they are kept from rain. When split into slips, and cleared of the pith, it makes exceeding good basket-work. The Negroes manufacture it, and the baskets used on plantations are generally made of it.

An ingenious gentleman of this island, Mr. Wallen, has some of the oriental *bambu* cane growing upon his estate, called Chiswick St. Thomas in the East, from which it is hoped this useful plant may be propagated in other parts of the island [x].

It is well known, that the *bambu* attains to a prodigious magnitude, and is converted into a variety of utensils by the East Indians. The inner-bark of it is made into paper, extremely thin. It is said, when these plants are young, the Chinese draw from them a juice of very agreeable taste, from which they prepare a delicious sauce, called *achar*. The leaves are commonly put round the tea-chests, imported into Great Britain, fastened together, so as to form a kind of mat.

Some authors relate, that in China this cane grows so large, that small canoes or boats are made out of it. It is certain, it may be regarded as a valuable acquisition to this island; and, if it reaches but to moderate bulk here, will be found extremely commodious for huts, and smaller buildings, various plantation utensils, conduit pipes, and other necessary uses.

60. LILAC, or HOOP-TREE, — *Syringa baccifera*.

There are several species of the lilac; what has been introduced into this island bears a beautiful flower, in which, white, purple, and crimson, are variously intermingled. It grows from the seed very rapidly in almost every soil, but is most luxuriant on the banks of rivers, or

[x] I am informed, it was brought from Hispaniola; and, having been dispersed by this gentleman, and Mr. Ellis of Jamaica, since its first introduction, it is now flourishing in many different parts of our island; where, its growth is astonishingly rapid.

running streams. By the falling of the berries, and their dispersion in the currents of water, near which they grow, as well as by the industry of birds, it has been very extensively multiplied. To prepare the tree for *hoops*, the side-twigs and branches should be regularly trimmed and lopped close to the stem, as it proceeds in growth; it is fit for use in two years from the planting the seed. It may then be cut, and the stem split longitudinally into pieces of proper length and thickness, and after being duly shaved, the hoops are smoak-dried on a barbecue (formed by four forked stakes, placed so as make the angles of a square, and cross bars laid to bear upon the fork or crutch) over a fire made with wood or trash, till they appear well seasoned and fit for use. They will prove sufficiently durable for sugar hogsheads, coffee casks, and such like.

These trees are subject to be bored by a beetle of the *scarabæus* species, which it is not easy to destroy; but, perhaps, a composition of tar and aloes might defend them from it.

The bark makes good *ropes*, for ordinary purposes.

61. Logwood, — *Hæmatoxylum*.

It seeds in April. The seed is very perishable, soon losing its vegetative principle. The season for sowing it should not be too wet, otherwise it will rot in the ground. In the neighbourhood of Savannah la Mar are such quantities of it growing wild, as to incommodate the land-holders extremely; occupying that district, as the opopanax and cashaw have the Southern parts of Middlesex county; but the logwood is so luxuriant and hardy after it comes up, that it will overrun the other two, and starve their growth. It was first propagated in this island in the year 1715, from some seed brought from the Bay of Campeche, with design to establish it as an article of export, and prevent the necessity of forming settlements upon the bays of the Spanish Main, where the cutters were liable to great risques, by working up to their knees in water, and constantly harassed by the stings of innumerable mosquito gnats, and the assaults of the Spaniards; but, although the event did not fully correspond with the benevolent intentions of those who first cultivated it here, it has answered many useful purposes.

Exclusive of its merit as a dye, it possesses other good qualities; it makes an excellent and beautiful fence, which, if kept properly trimmed, grows so strong and thick, that nothing can break through.

The

The smaller stems, if of good length, are made into hoops, where better materials are wanting. The wood gives a purple tincture by infusion, which is easily changed or heightened, by acid or alcalious mixtures. The bark and gum are gentle subastringents; but the last excels, and adds a sweetnes to its virtue, which renders it more agreeable to the palate. It is found very efficacious in looseness; for if two ounces of the chips are boiled in a quart of milk, and a quart of water, to one quart, and a tea-cup full of this decoction be given every three hours, it seldom fails to cure a common diarrhoea.

The growth of this tree is so quick, that it will rise, in proper soils, to the height of ten feet in three years. If an advantage is proposed to be made by the wood, the seeds ought to be sown in swampy lands, such as those about Black River, and all the branches permitted to remain, which will be of great use, in augmenting the bulk of their stems.

In preparing it for market, the wood is cut into junks or logs, of about three feet length, and cleared of the rind or bark; this is called chipt logwood. It is chosen in the largest thickest pieces, sound, and of a deep red colour. The current price is from 3*l.* 15*s.* to 4*l.* 4*s.* sterling, at the British market.

62. FRINGRIGO, or COCKSPUR. — *Pisonea Aculeata*. Browne, p. 358.
Paliuro affinis arbor spinosa. Slo. cat. p. 137.

The seeds are glutinous and burry, sticking so fast sometimes to the ground-doves, and pea-doves (which feed upon them), as to prevent their making use of their wings. The stem is often used for hoops. The root is a specific among the Negroes, for the cure of the *gonnorrhœa simplex*. The leaves, chopped and mixed with corn, are given to horses, to free them from bots and worms.

63. HOOPWITHE. — *Rivinia scandens*.

This plant is very common in the lowlands, and stretches a great way among the neighbouring shrubs and bushes. The berries make the principal part of the food of the nightingale, while they are in season. They contain a very oily seed, and after that bird has swallowed a good many of them, it flies to the next pepper bush, and picks a few of these warm berries also, by way of promoting digestion.

The stalk is very tough and flexible, and often made into *hoops*; but they are not in esteem for long voyages, as being not so strong nor durable as some others.

64. HORSE-WOOD, or HOOP-WOOD.—*Zygia*.

This shrub is common at the North-side, it grows generally in low, moist lands; but is likewise found in the mountains: the wood is pretty tough, and sometimes cut for *hoops*.

65. BIRCH-TREE.—*Terebinthus*, vel *Pistaciæ species*.

This is very common in all the Southern hills and lowlands. The wood makes excellent cattle yoaks. The bark is thick, and transudes a clear transparent resin, very odoriferous, and resembling *mastic*; but it yields a considerable quantity of a more fluid resin, by incision; which has much of the smell and appearance of *turpentine*, and may be used for the same purposes.

The bark of the root, has been conjectured to be the *sima rouba* of the shops, the most effectual remedy hitherto known in bloody fluxes, given in decoction of one or two drachms to a quart of water. It is certain they are very similar in appearance.

The *sima rouba* grows in Guiana, but has not yet been sufficiently described, so as to determine the analogy with more exactness.

66. FERN-TREE.—*Adiantum maximum, ramosum, arborescens*.

There are near 100 varieties of the fern and maidenhair, scattered over this island, which are endued with the like qualities as those of Europe.

In many parts of England it is common to burn them, and make balls of the ashes for bucking or cleansing coarse linen; before they are used, they are made red hot in the fire, and readily fall into powder when thrown into water. The root of the female ferns, which are distinguished by the black colour of the lower part of the stalk, powdered and mixed with honey, has been given to a drachm or upwards with great success for destroying the *tænia*, or tape worm.

The trunk of the fern tree is hard, and ligneous, often rising to the height of six or eight feet; it is extremely durable, resists all weathers, and is frequently used for hog-slie posts, and other inclosures.

67. BRANCHED HORSE-TAIL.—*Equisetum ramosum*.

This plant is commonly found about the river courses of the North side.

When dried, it is used by the *cabinet-makers*, to give a polish or finishing to their work ; for the surface of it is like a fine file, furnished with short delicate denticles, which rub off the small protuberances of the wood by slow degrees, and cause it to become smooth and shining.

Dried and powdered, it is esteemed a specific for stopping internal or external haemorrhages of blood ; and healing ulcers and excoriations, strewed upon the part affected.

It is likewise recommended in coughs, and cattarrhs.

68. TRUMPET-TREE, or SNAKEWOOD.—*Cecropia obtusifolia*.

This tree grows in most of the woody parts and gullies ; but particularly at the North side, where it rises to a considerable height.

The leaves and flowers are eaten by the Negroes in their broths. The fruits or berries resemble the raspberry and strawberry, in taste and flavour, for which reason they are very agreeable to European stomachs. The bark is strong, and frequently used for all sorts of cordage. The leaves are good fodder for cattle. The trunk is very light and hollow. This tree is probably a species of the balza, mentioned by Ulloa, of which the Indians of Guiaquil form convenient rafts, by placing nine or ten pieces of about 36 feet long each, side by side, and bracing them close with cross pieces well lashed, on which they transport all sort of merchandize.

Similar floats are likewise made with the trumpet-tree in Brazil, called *jangaras* ; with which they cross rivers. The Indian name for the balza-float is (according to Ulloa) *jangada* ; which similitude confirms the opinion that the species are alike, though the trees of the continent may probably be of much greater bulk than what are found in this island.

The juice of the tender tops are subastringent and medicinal in immoderate fluxes. The leaves, bruised and made into a poultice, are an admirable vulnerary. The dry wood soon kindles into a blaze, by friction with a piece of harder wood. The Negroes, who have recourse to it for this purpose, make a small hole, with

the point of a knife, in a dry piece of the trumpet-tree; then fix it between their feet, and, sharpening the harder wood to fit the hole, twirl it rapidly with the palms of both hands till the fire is kindled.

The trunk and branches yield a great quantity of fixed salt, much heavier than any other wood-ashes, and making a far stronger *lixivium*: for this property, it has formerly been administered with success in dropsical habits. But the French planters have applied it to a much better use: they mix a quantity of it in their coppers, to despuamate and granulate their sugars, when the juices are so viscid, that the alkaline salts of the lime will not procure this effect.

The cane-liquor, either by the foulness of the ground, or the plants being too old, bruited, or rat-eaten, will often acquire an uncommon degree of sharpness, not inferior to the acid of lemons, which renders it black and syrupy. In this case, as well as when the liquor is obtained from canes growing in rank, fresh soils, the trumpet-tree ashes promise to bring on the granulation beyond any other ingredient that can be used. Its operation may be assisted by additions of lime-water, where a sourness prevails; or of clear water, where the liquor is too viscid. The acid principle, by these infusions, may be gradually absorbed, and neutralized; and, in order to depurate it from those particles which by intermixture often darken its complexion, about four ounces of finely-powdered allum to every one hundred gallons of liquor, may be thrown into the second tache; which will precipitate such feculencies. Before the liquor is cast from the first tache, it should be suffered to stand undisturbed by the ladle for a short time, and then passed through a good strainer; and, if the last ladle-full or two appear dirty, they may be given to the still-house.

The great rankness of the North-side canes, owing to the fresh and rich quality of the soil, occasions their liquor to be very commonly in the state before-described. In these places, the trumpet-trees are always found in greatest abundance; nature having furnished the planter with this remedy ever at hand, if he is disposed to make use of it.

69. Indian ARROW-ROOT. — *Maranta*.

The origin of the name is said to be this. An Indian, being taken prisoner after he had wounded an European with a poisoned arrow, was put to the torture, till he promised to cure him; and performed it effectually with the root of this plant, applying it bruised in form of a poultice, and giving the juice inwardly.

It has a stalk and leaf exactly like the plant called Indian shot; but the flower differs; that of the latter being a beautiful scarlet; and that of the former, milk-white.

The leaves fall in December, and the root is fit to dig in January.

A gentlewoman of the island, having been bitten on one of her fingers by a black spider, the part became inflamed, and her whole arm was swelled quite to the shoulder; the pain of which threw her into a fever, and symptoms of fits, in less than an hour. But some of this root being procured, and applied bruised, she was greatly relieved in half an hour's time. In two hours, a fresh poultice of the same sort was put on; which still brought more ease, abated the fever, and in twenty-four hours she was perfectly well again. I have mentioned, in another place, the powerful effects of this root, in counter-working the poison of the dog's-bane, or *nerium*.

It has been administered also with very good effect in malignant fevers, when all other remedies failed. It is given in decoction, but most approved in powder, in a dose of one to two drachms. It has no ill taste or smell, operates chiefly by sweat and urine, and yet is a very singular cordial; so that, if it was to be candied like the eringo-root, it would form an agreeable preserve, and possess the like prolific virtues. The root is mealy; but may be kept perfectly sound for many years, as no insect will meddle with it. Washed, dried, and reduced to an impalpable powder, it makes an excellent starch; and has been used as a *succedaneum* for the common sort.

70. STIPTIC, or VELVET-BUR. — *Verbena*. 5 Browne, p. 116.

This plant is applied to bleeding wounds, and thought so powerful a styptic, as to stop an hæmorrhage even when some of the principal arteries are cut. It is likewise an excellent application in all manner of sores in relaxed habits.

71. VELVET-LEAF. — *Clematis baccifera*, &c. Sl. Hist. p. 200.

This plant grows in great plenty commonly amongst ebony-trees, climbing about them. Its leaves are as soft as velvet, rounding, of a yellowish-green colour. It is a great vulnerary, applying only one of the leaves to the wound ; and heals ulcers in the lungs, a syrup being made with the leaves and roots; which has performed very extraordinary cures in consumptive cases.

72. VERVAIN. — *Verbena, folio subrotundo, serrato, flore cœruleo.*

This differs not in appearance from the English vervain in leaf, flower, or seed, except that the leaf is somewhat rounder, and it is green here all the year round. It is esteemed a very powerful remedy in worm-cases. The death of most children in America is occasioned by these reptiles, which are propagated (it has been supposed) by too great indulgence in fruits. The juice of the vervain-leaves, joined with the contrayerva, and made into infusion with Madeira wine, expels them, and checks the fever consequent to these disorders.

73. HOGWEED. — *Boerhavia*. Browne, p. 123.

This is thought to be a species of valerian. The leaves are gathered for the hogs, who devour them very greedily ; and they are looked upon as a fattening and wholesome food for them.

74. BROAD-LEAFED COMMELINA. — *Commelina, foliis ovato-lanceolatis, acutis, caule procumbente glabro.*

This plant is an annual ; has oval, spear-shaped, pointed leaves, and a smooth, trailing stalk, near two feet long : these put out roots at the joints, which strike into the ground. At each joint is one oval, spear-shaped leaf, ending in a point. The flowers come out from the bosom of the leaves, inclosed in a spatha, which is compressed and shut up. It is an excellent fodder for most kinds of cattle.

75. RUSH. — *Scirpus*.

There are six species, growing in moist places and ditches, observable in this island. The smaller are proper for candles ; the larger for mats and chair-bottoms.

76. REED-

76. REED-MACE, or CAT'S-TAIL. — *Typha*.

This is commonly found in all the lagoons. The leaves are long and ensiformed. They make excellent mats. The seeds have a stupifying quality; and, when pounded and mixed with butter, or other proper substance, destroy mice.

An unguent is prepared of them, with hog's lard, for burns, or scalds. The seeds are esculent, roasted.

77. SCOTCH-GRASS. — *Panicum majus*.

This grass obtained its name from a part of Barbadoes, called Scotland; from whence it was originally brought. It thrives luxuriantly in all low, marshy places, and in the brackish rivers. It is propagated by the joints, set in holes, placed about two feet and an half asunder. In six months, from the time of planting, it is fit to cut; and continues to be cut every month, or six weeks, after, if the seasons are favourable, and the land cleared of weeds. An acre of proper soil, well-stocked with this plant, near the towns, has been computed to yield, in seasonable years, a profit of above 120*l.*; which is superior to the yielding of the sugar-cane, or almost any other vegetable production that is cultivated here.

When once planted, it holds for many years; but young joints must be occasionally set, in the room of the old, stubbed, and hard stalks. It is a hearty fodder for horses, or cattle.

78. { GUINEY CORN. — *Panicum erectum maximum, panicula singulari.*
GUINEY WHEAT. — *Panicum erectum maximum, paniculis plurimis.*

The former of these is more universally cultivated, and thrives well in the savannah lands. The grain of both species is similar in appearance, and of the millet-kind. It yields a fine, white flour, very nourishing, and constitutes a principal part of the food of the Negroes. It is likewise the proper grain for poultry; and sometimes is given to horses and hogs, but to very little purpose, being so small, that it passes through them entire. The stalks are an excellent fodder, and, when dried, may be laid up in a rick, for the

use of labouring cattle in dry years. It ripens in three months from the time of planting.

79. BARBARY CORN, or MILLET. — *Panicum Mauritanum*.

I have seen this growing extremely well in a gentleman's garden on the South-side. The grain resembled the Guiney corn, except that it appeared somewhat larger. It is perfectly adapted to the soil and climate of this island, and will therefore become without doubt more generally cultivated. The seed was brought from Mogadore, a sea-port town on the coast of Morocco.

80. GREAT CORN, or INDIAN MAIZE. — *Zea*. With yellow Grains.

This is universally cultivated throughout the island; but thrives most luxuriantly, and bears the largest grain, in the richer soils, and where the seasons are favourable. It is a hearty, wholesome food among the Negroes, who make it into various messes, according to their fancy. It is given to horses and mules, instead of oats, and to sheep and poultry, in order to fatten them.

It was probably brought from Guiney, where it is said to require a hilly, good soil, not subject to be over-flowed; whereas the rice and millet thrive best in low, moist grounds.

It is generally planted here a little before the usual periods of the rainy seasons, though some plant it indifferently at any time, and frequently fail; but it is usual to get two crops in the year.

It is laid in rows, at the depth of three or four inches. As soon as it appears six inches above the surface, it is weeded; and, when grown to a tolerable height, the earth is moulded up about the roots.

The ears have from two hundred to two hundred and forty grains; and, allowing three spikes to each stem, and three stems to one seed, the produce from each single grain is two thousand for one. They are often gathered before they are thoroughly ripe; and, being roasted, form a dish known here by the name of *mutton*. The stalks are full of a saccharine juice, from which a syrup may be made, as sweet as sugar. These stalks are an excellent, hearty fodder for cattle, and may be stacked like those of the Guiney corn, for provision in times of drought. This plant is thought to impoverish

verish land; and, considering the rich juices of the stalk, and greatness of yielding, it undoubtedly requires as good and strong a soil as the sugar-cane: for this reason, those planters are much blamed who cultivate it on the banks between their young canes; for, the use of these banks being to be drawn down, and apply nourishment to the canes in the course of their growth, they are too much exhausted by the maize, which seems to absorb and extract nutriment from the same vegetable principles as the sugar-cane; and it must consequently rob them of great part of that food of which they are in want, especially in the poorer, well-worked lands; though the objection is so far from lying against rich, fresh soils, that it may be very serviceable in such, and assist to drain away that superfluity of the vegetative principles which throws up too rank and luxuriant a cane.

This opinion is strengthened by a common observation, that the maize-corn will not thrive well in soils where the sugar-cane will not thrive. But I have seen fine corn produced in a very poor, exhausted piece of ground, by laying manure with every seed, or grain. And in North-America, near the sea-coast, the Indians used to put two or three dead fishes under or adjacent to each corn-hill; and by this means gained double the crop they would otherwise have got. The English there learned the same husbandry, near the fishing-stages, where they could procure the heads and garbage of cod-fish, in abundance, at no charge but the fetching.

In that continent, the seed is regularly planted after the plough; and the ears, when gathered, are threshed with a flail; but, as this method breaks and bruises them, a better way has been recommended; which is, to rub the ears hard against the edge of a flat piece of iron; this separates the grains from the husk without hurting them. The husks, as well as the stalks, are good fodder for cattle. In Jamaica, the Negroes rub one ear against another; and the callosity of their hands, add'd to this method, answers the purpose of iron. When this corn has been well-dried in the sun, it will keep several years, if the weevil does not attack it; but it is remarked, that this insect is more apt to fall upon it while it is left in the ear, than when the grain is separated, the sweet juice of the stalk; perhaps, attracting them more than the corn itself. When it

is laid up in a granary, care is taken to keep it from dampness, and turn it occasionally.

This corn does not make a good bread by itself; but, if the flour of it is mixed in the proportion of one pint to three pints of wheat-flour, it will answer for common use. The dough made with it is very heavy, and fermented with difficulty.

The Negroes parch and grind it into powder, sometimes mixing a little sugar with it. They esteem it a dainty, and particularly convenient on a long journey.

But the more common way of using it is in puddings, after it has been well pounded in a wooden mortar.

All creatures fed with this corn have firm, fat flesh. The pork of corn-fed hogs is esteemed the finest in the world for flavour and goodness; the horses, cattle, and mules, foddered on the leaves and husks, are hardy, and enabled to go through the greatest degree of labour; and the people, who make the grain a principal part of their diet, are healthy, strong, and active.

The ears of it, while it is growing, are said to be greatly hurt by cutting off the panicles, or beards, too late. They ought to be cut before the hoods, or husks, open; and, by leaving a plant with its male ears at every twenty feet distance, all the female plants will be impregnated.

The measure, used here for sale of this corn in the grain, is the common Winchester bushel, of eight gallons. The price seldom varies much, being generally from 5*s.* to 6*s.* 3*d.* currency, or sterling 3*s.* 6*½ d.* to 4*s.* 5*d.*, per bushel. What is imported from North-America is chiefly of the white, large, flat grain; which is sold cheaper, but is reckoned far inferior in substance and goodness to the Jamaica product. In times of great scarcity, it has risen to 10*s.* per bushel; which serves to shew the advantage to be derived from a more extensive cultivation of it in the island, as the failure of importation from North-America always causes a scarcity, or gives an opening for an imposition, the inhabitants not raising much above half enough for their own consumption. In the midland parts, where the soil is rich, the seasons regular, and canes would grow too luxuriantly, it may be cultivated with the greatest success.

81. WILD OATS.—*Pharus*. Browne, 344.

This plant is frequent in all the woody hills, and esteemed an hearty, wholesome food for all sorts of cattle, being generally gathered for them in times of drought.

82. Larger MILLET-REED.—*Arundo sylvestris ramosa*. Browne, 138.

This plant is very common in the woods, and makes an hearty, agreeable fodder, like the last-mentioned.

83. MOUNTAIN-GRASS. — *Andropogon erectum montanum*.
Browne, 365.

There are several varieties of this and other grasses; and their multitude so great, that to insert the list of them would be inconsistent with my plan. I therefore refer to Sir Hans Sloane's work, where the major part are enumerated; and shall only speak of a few, that are esteemed the most useful. The Dutch, burr, crofs, speckled, and manna grasses are among the best for fodder in the lower situations.

84. SOUR-GRASS. — *Andropogon avenaceum affurgens*. Browne, 365.

This plant is found, in great abundance, growing in fences, and at the feet of walls, and the banks of gullies, shoots luxuriantly, and retains its verdure in the driest seasons. The cattle will not meddle with it whilst it is green; but, after it has been cut, and dried in the sun, it makes an hearty fodder for them; and has the merit of being vigorous and useful when other grasses are scorched and perished for want of rain. In the time of great drought therefore, during crop, it may be cut and cured for the road-cattle.

The roots and leaves, pounded and applied externally, are observed to cure sores and ulcers, of all sorts, with more certainty than most other things used for that purpose. It is a strong detergent and agglutinant, and would probably make an excellent ingredient in vulnerary apozems and infusions. Simples of this kind, those especially which are of a stimulating nature, have been always observed to answer much better in this climate than ointments and regular dressings.

All unctuous substances, imported from Europe, soon lose their mildness after crossing the Line, and turn acrid; by which degeneration of quality, they impart to ulcers a putrefactive tendency, and, so far from healing, often render them incurable: an evident and very cogent reason, to prove the expediency of uniting a knowledge of botany to chirurgical practice in this island, and of preferring the fresh-gathered vegetables, indigenous in it, to the stale and corrupted medicaments imported from Europe.

85. WORM-GRASS. — *Anthelmenthia*.

This plant is now cultivated in many gardens in the island. It was brought originally from the Spanish Main, and takes its name from the extraordinary virtues it possesses in destroying worms in the human body.

Two moderate handfuls of this plant, either green or dry, are boiled over a gentle fire, in two quarts of water, till they are reduced to one quart. The decoction is then strained off, and a little sugar and lemon-juice added, to make it more palatable. Sometimes the decoction is made into a syrup with sugar; and in this form may be given to children. Half a pint, at the hour of going to rest, is the dose for a full-grown person, and proportionably to weaker persons and children. This is repeated once in every twenty-four hours, for three or four days successively. But, lest this dose should prove too large, it will be a safer practice to begin with about a third of a pint for a grown person; and so in proportion for others; repeating it in a still smaller quantity at every interval of six hours between each dose, if its anodyne quality will permit. But in weaker constitutions, and for infants, it may be repeated only at the distance of twelve hours. This is continued for thirty-six or forty-eight hours; at the expiration of which, the double dose may be again administered. After this takes effect, it is to be worked off with gentle purgatives, as the infusion of senna, or rhubarb, with manna, and the like. It procures sleep almost as certainly as opium, removes the fever and convulsions, and expels the worms in great quantities. When a few only are brought away, and many are suspected still to remain, the dose must be repeated, and will rarely or ever fail. It is supposed rather prejudicial

prejudicial to weak eyes, and is therefore cautiously given to very young children.

86. GRASSY-CYPERUS, OR SEDGE. — *Cyperus*.

There are a great many varieties of this plant in the island. The roots of all are esteemed specifics in pestilential fevers.

87. GUINEY GRASS. — *Holcus major affurgens*.

This plant, like the Scotch grass, is universally cultivated in the island for pasture and the stable. It is planted by the root, or the joint, when the earth is well-moistened with rain. It does not require so much moisture as the Scotch grass; and is justly esteemed a more hearty and nourishing fodder. After it is planted, particular care is taken to keep the ground well-hoed, and clean about the roots, till they are well-established.

When it first seeds, it is usual, at the time of maturity, to turn in cattle to graze, that, by shaking the plants, the seed may be dispersed, and their vegetation accelerated by the dung. When the stocks are old, the roots appear extended into very large tufts, and the leaves short and slender, intermixed with dry, hard stems; these are burnt off, without injury to the root, a little before the setting-in of the rains; and, the root being divided, a new plant is made on some detached piece. Upon the first fall of rain, the old roots recover their former verdure, and shoot up surprizingly quick. In the drier lowlands, it may be cultivated to the best advantage in trenches; but in the mountains and more inland parts it thrives best, and in some places runs into a sod. When planted in the intervals of cane-pieces, it occupies no ground that is convertible to any other use; but serves as fodder for the mules, horses, and working cattle; affords a valuable addition to the stock of manure; and proves a safeguard to the canes against the spreading of accidental fires. It is also planted in the gullies and other waste parts.

The usual time of planting it on the South-side is in September, or October. Where it is in sufficient quantity, it may be cut, sun-dried, and put in ricks, for the working cattle in crop-time; and makes a very nourishing hay.

88. RICE. — *Oryza*.

This plant thrives extremely well in moist bottoms between the mountains. It ought only to be cultivated in places where the ground can be flooded with water. The marshy grounds therefore in this island, such as those at the Ferry in St. Andrew's, the East end of St. Thomas in the East, the lands about Black River in St. Elizabeth's, Negril in Westmoreland, and other similar parts, appear naturally adapted to this grain, if it should be thought worth while to cultivate it, as an additional supply of food for the Negroes.

A gentleman having planted some out of season, it grew very rank, but did not bear. Upon which, he cut it down close to the root, and fed his horses with it. But it afterwards sprung up again, and, in the proper time of bearing, yielded an extraordinary quantity of grain. I mention this for the sake of experimentors, who, deceived by the apparent sterility on a first trial, if they should happen not to have hit upon the proper time of putting the seed in the ground, may learn from this example in what manner to rectify their mistake, so as not to be disappointed of gathering a crop in the end.

89. RAMOON. — *Trophis*.

This tree is well known among the planters. The tops and leaves of it are succulent, and make an agreeable wholesome fodder for all sorts of cattle. For this purpose the branches are lopped and thrown to them in dry weather, or when other fodder is scarce; and they are always observed to thrive and grow fat upon this aliment. The berries are about the size of large grapes, and of a pleasant flavour.

90. BREAD-NUT. — *Alicastrum arboreum*.

The leaves and younger branches of these well-known trees are a hearty fodder for cattle, horses, and sheep. They are propagated by the birds and rats from the seed; and sometimes they have been planted in the dryer pasture-lands of the South-sides. I have observed that every old fence in such places is a nursery for these and other valuable trees; which observation may furnish a good

hint

hint for the successful planting them, the shade of the fence generally keeping the ground beneath much more cool and moist than it is in the open pasture: the soil is also richer, from the mould of decayed leaves and vegetables. Hogs are extremely fond of this fruit; and, when boiled with salt-fish, pork, beef, or the pickle of salt-meat, it has often furnished a nourishing repast for the Negroes in times of scarcity. When roasted, it tastes somewhat like the chesnut. The bread-nut of St. Anne is an excellent timber, and much esteemed for cabinet-ware.

91. ARUM.

There are a great number of this class in the island, of which I shall mention only those most in use.

DUMB-CANE.—*Arum cannae Indicæ foliis.*

It is found in almost all the river courses among the mountains, and delights in moist, cool, shady situations. It takes its name from the property it has, upon being chewed, of benumbing the tongue and dilating it, so as to obstruct the speech entirely, causing at the same time a great efflux of the *saliva*.

It rises in joints, and resembles a green sugar-cane: The greenest and most succulent, pounded into a pulp, and mixed with hog's or turtle's fat, and agitated together for several days, heated and strained through a coarse cloth, are then boiled up to a consistence and kept for use. This ointment is applied warm, and chafed upon the swollen parts in dropical cases, and a cataplasm of the same laid over the *scrotum*; and it is said to discuss the watery humour collected in those parts.

The crude juice of the stalk, thrown into the tache, is used by some to bring sugar to granulation, when the syrup is so viscid, as not to grain with lime-water alone.

The acrimony of this plant is much greater in October, than in the spring; being probably fuller of sap, after the autumnal rains, which causes a ferment.

92. PURPLE Coco and TANNIER.—*Arum acaule purpureum.*

This useful plant is cultivated from the seed, and generally in use among the Negroes, who boil the roots in their broths, and find them a hearty aliment.

The tops are called tanniers, and used for feeding hogs.

After they appear above ground, they continue their vegetation without any further trouble of hoeing, moulding, or weeding.

93. WHITE Coco and TYRE.—*Arum acaule maximum.*

The tops of this plant sometimes supply the table with greens, but are reckoned inferior to the Indian kale. The young roots are wholesome, dry, and nourishing, and used in broths. Those which shoot round the top of the old roots are called *tyres*.

94. { SCRATCH Coco and } *Arum acaule maximum, radice le-*
 { EDDYES or EDDOES. } *niter mordicante.*

The roots of this species are used like those of the others, but not so commonly cultivated. The old roots, though boiled for a long time, still retain a degree of pungency, which affects the throat. The young ones, which shoot round the top, are called *eddyes*.

95. BABOON or HOG Coco.—*Arum acaule subcaeruleum maximum.*

The root of this species grows to a monstrous size, is very coarse, and of an easy growth. It is planted chiefly as food for hogs, which it fattens well.

The roots of every species, more especially the spotted ones, possess an extraordinary acrimony; but after being dried and kept for some time, they lose all this quality, and become insipid to the taste.

The dried root, pulverized and mixed with honey, expectorates tough phlegm, and is reckoned excellent in asthmatic complaints. Mixed with flour of brimstone, it is a specific in consumptions. The fresh roots and leaves, distilled with a little milk, form an approved cosmetic lotion. And the juice expressed from the leaves is recommended for cleansing and healing foul ulcers.

96. INDIAN KALE.—*Arum acaule, medium, radice minori carnosâ.*

The leaves boiled are a wholesome palatable green. They are tender, mucilaginous, with a slight pungency, and agreeable to most palates. It is cultivated in most parts of the island, and a small bed of it is sufficient to supply one or two families all the

year,

year, for it grows very luxuriant and quick, and the oftener it is cut, the better it thrives; but it ought to be transplanted from time to time into fresh soil, to prevent its dwindling.

97. BRANCHED CALALUE. { *Solanum humilius diffusum*, Br. 174.
Solanum somniferum, Theb. Zey.

It is remarked of this plant, that it is equally common in Europe, and though of a heavy strong smell, and very narcotic quality in cold climates, it is void of both in Jamaica, when dressed by fire. It is in daily use here for food, and the leaves found by long experience to be a pleasant wholesome green. The *smooth red calalue*, or *atriplex*, has the same use and good quality when boiled.

98. PRICKLY CALALUE.—*Amaranthus aculeatus rufescens*.

This is frequent in the mountains and lower hills, and used as a green, being universally esteemed a wholesome agreeable vegetable.

99. SPANISH CALALUE.—*Phytolacca eretica simplex*.

This is cultivated in most of the kitchen-gardens; and in constant use as a palatable wholesome green. The tender stalks are no bad *succedanea* for asparagus.

100. MOUNTAIN CALALUE, POKEWEEED, SURINAM or JUCKATA CALALUE.—*Phytolacca affurgens ramosa*.

It is indigenous to this island, and found in all the cooler hills and mountains, where it grows very luxuriantly. It rises generally to the height of four or five feet, divided towards the top. It is called either *red* or *white*, from the colour of the flower-stalks, for all the branches terminate in long and tender spikes of those colours. The leaves and tender shoots are frequently used for greens.

The inspissated juice has been thought a specific, or at least a very powerful remedy, in open cancers, applied in form of a plaster.

The root, pounded when fresh, and applied as a poultice to the ulcers of pocky mules and horses, performs a certain cure. The dressing must be renewed every day, and, previous to the application, the parts affected are washed clean with a mixture of salt and lime-juice in warm water; and a drench of flour of brimstone in gruel,

sweetened with molasses, may be given at the same time, to assist the discharge. The poultice has been found no less effectual in healing sores on the human body. This plant is the same as the *red weed* or *poke* of Virginia and New-England, from which the Indians prepare a red dye for staining their baskets, skins, and several other manufactures.

Some dyers there, are said to gather the roots, and make a fine red tint of them; but I incline rather to think they make use of the flower, berries, and stalk for this purpose, as they are all of a beautiful red; whereas the roots are very white. When the juice of the berries is put upon paper, or the like, it strikes it with a high purple colour, which is as fine as any in the world, but requires something to fix it, and prevent its fading.

A spoonful or two of the juice of the fresh root purges strongly, but when it is dry it loses this quality. The young tender leaves have very little of it; but those which are old, large, and thick, are said to operate violently; nevertheless I have known them boiled and eaten, in order to open the body in the dry belly-ache, and with great advantage and safety.

101. THORNY, TUFTED SOLANUM.—*Solanum spinosum & villosum.*

The pounded leaves are successfully applied to kill the maggots which infest large sores on cattle; the juice keeps them clean, and destroys most sorts of vermin.

**102. BROWNJOLLY, VALINGHANNA, or MAD APPLE.—
*Solanum pomiferum.***

This plant was first imported into Jamaica by the Jews, and is cultivated by many persons. It bears a number of large berries, which shoot and ripen very gradually; these sliced, pickled for a few hours, and boiled to a tenderness, are used instead of greens.

Some parboil them, take off the skin, which is a little bitterish, then fry them in oil or butter.

103. LOVE APPLE or COCK-ROACH APPLE.—*Solanum villosum, spinosum, fructu majori, mucrunato luteo.*

This is a native of Jamaica, and bears its fruit on single foot stalks; the smell of the fruit or apple is said to kill cock-roches.

104. TURKEY BERRIES.—*Solanum affurgens trichotomum foliis ovatis, fructibus minoribus.*

This and the other plant of the like name are common in the lowlands. They bear pretty thick; the berries are generally of the size of the European cherries, and serve to feed turkies.

There are several other species of the solanum, whose roots are possessed of great medicinal virtue, answerable to different intentions, some being hot, and others cooling.

105. TOMATO. *Lycopersicum calicibus septem partis, fructu rotundo, glabro.*

These berries are very large, compressed at both ends, and deeply furrowed all over the sides, filled with a pulpy juice, which has somewhat the taste of gravy, for which reason they are often used in soups and sauces, and impart a very grateful flavour; they are likewise fried, and served up with eggs.

The Spaniards esteem them *aphrodisiacs*.

The juice is cooling, and of service in defluxions on the eyes, and all inflammatory indispositions.

106. WINTER CHERRY. *Physalis.*

The berries are yellow when ripe. They are looked upon as diuretic, and serviceable in over-heated or febrile habits; they have a gentle subacid taste, joined with a light bitter, which renders them agreeable to the palate in such cases.

The fume of the plant in its succulent state, burnt with wax, and received into the mouth, has been observed to kill the worms in and about the teeth, and ease the tooth-ach. Where the berries are required as a diuretic, they are bruised and steeped in Rhenish wine, or the juice thickened to the consistence of an extract. The juice of the leaves and fruit mixed with Indian pepper is said to give immediate relief in the colic, provoke urine, and open obstructions.

107. IRISH POTATOE.—*Lycopericon radice tuberosa*.
 108. SWEET OR BERMUDAS POTATOE.—*Convolvulus repens*, *radice crassa*, *carnosa*, albo.
 109. POTATOE SLIP.—*Convolvulus repens*, *radice crassa*, *carnosa luteo*.

These several sorts are cultivated extensively in the island. The first is thought to degenerate. It grows what is commonly called waxy, and acquires in time a more saccharine taste than those which are imported from Europe.

The second and third differ from each other only in the colour of their roots, those of the former being white, and of the latter yellow.

These two rise from slips, and are cultivated by laying a few short junks of the stem, or the larger branches in shallow trenches, with inter-spaces, and covering them with mould from the banks. The roots come to maturity in three or four months, and the propagation is continued by covering the stems, bits, and smaller protuberances with mould, as they dig up the more perfect roots for use. The leaves are good fodder for horses, sheep, goats, hogs, or rabbits. The roots pounded are often made into a kind of pudding, called here a *pone*, which is baked, and, with the addition of a few ring-tailed pigeons, justly esteemed a nourishing and relishing dish. Boiled, mashed, and fermented, they make a pleasant cool drink, called *mobby*. They will also make an excellent bread mixed with flour; for this purpose they are boiled till they begin to crack, or that the skin peels off readily; they are then peeled and bruised (while they are hot) in a mortar, till not a lump remains in them. This operation is performed in the evening before the bread is to be baked. The next operation is, to dilute them well with as much boiling water as is necessary to give them the consistence of dough. Then, after mixing them well with the leaven and flour, the whole is well kneaded together as quick as possible, and the dough covered with a cloth in a warm place, till it rises. The water that is used ought to be boiling hot, or it will not answer sufficiently, and is poured upon the potatoe mass before the flour is added.

The

The heat of the oven is to be the same as for other bread, except that it must be rather slackened to prevent this bread from taking too much colour; and it is in the highest perfection when thoroughly baked.

The proportion of flour varies according to fancy or necessity; there must be at least one third part flour to make it eatable; but that which is made with an equal quantity, or a little more, is best. It will then be well tasted, wholesome, very nourishing, easy of digestion, and will retain its moisture many days longer than other bread; a circumstance which recommends it particularly to common use in this climate.

It might be worth the trial, whether putting a small piece of chawstick, *viz.* about one or two inches length, into the water just before it begins to boil, might not so impregnate it with air, as to cause the dough to rise better, and render the bread much lighter; or a spoonful of water in which the stick has been infused for several hours, might be added after the boiling water is poured on.

110. OKRO or OCHRA.—*Hibiscus ramosus, hirsutus, foliis lobatis,*
&c. Browne, 285.

The pods of this very common plant are a customary ingredient in most soups here; and that celebrated and desireable hotchpotch called *pepperpot*, cannot be compleat without them. They are sometimes boiled separately, and served up with butter.

The fruit when grown is cut transversely with its seeds, and when dried, is packed in well-stopped bottles or cannisters, and sent to Great-Britain to be used in rich soups. This was formerly an article of commerce, and sold in England at ten shillings per pound.

It is cooling, emollient, highly nutrimental, and very proper for diseases of the breast; it provokes urine, and has been found beneficial in the stone and gravel.

But it is chiefly efficacious in consumptive cases, attended with a depraved appetite, hectic heats, and loss of flesh; and for such cases, the seeds are equally remedial, as the other parts of the fruit. They are easily dried, and may be sent in this state to any part of the world, packed in tight kegs or casks. When used, they are beaten very fine,

sine, and the flour separated from the husk. A small quantity of this flour may be put into broth, or soup; and, when taken daily in this manner, it has been known to recover many persons, from the very brink of the grave, to a robust state of health.

111. MUSK-OKRO. — *Hibiscus bispidus, femine muscato.*

The seeds of this plant, when grown to full maturity, have a strong and perfect smell of musk, a few grains being sufficient to perfume a whole room. It is used with great propriety in powders, pomatum, essences, and the like, as well as in medical preparations; and might be a valuable article of export.

112. JAMAICA SALOP. — *Satyrium, foliis liratis longissimis, &c.*

Browne, p. 325.

The leaves of this plant, which is found only in the cooler parts of the mountains, resemble those of a young cocoa-nut. The root, as it dries, acquires a great deal both of the colour and taste of rhubarb; but it should be sliced, and kept a long time in the open air, to be properly cured. It is used as a stomachic, and is observed to thicken the *saliva* when chewed, and thought to abate the acrimony of the humours by its mucilaginous quality. Browne describes fifteen species of the *satyrium*. Sloane mentions several, under the name of *orchis*; and, among the rest, “*orchis elatior, latifolia, asphodeli radice, spiculifrigosâ.*” Cat. p. 119. This has double tuberous roots, much like those in England, and was thought a specific to help impotency; the essence, juice, or extract, being taken twice a day in a glass of wine. Mr. Moult lately communicated a very simple method of preparing the roots. They are first deprived of their thin skin, then kept in the heat of a bread-oven eight or ten minutes, where they acquire a transparency like that of horn; and are afterwards removed into a common room, in which they grow dry, and harden in a few days.

113. WILD CASSADA. — *Fatropha humilior, setis ramosis, foliis tri vel quinque lobis, leviter denticulatis.*

This is very common about Kingston, Spanish Town, and most parts of the island, where the soil is dry, and situation warm. It

grows luxuriantly where the ground has been manured with dung. It is a very beneficial plant in every settlement where poultry is bred; for most sorts of birds, and especially those of the crowed kind, feed heartily on its seeds.

In the months of March and April is found, in the inside pith of the foot-stalk, an hard, knotty substance, of an oval form, and yellowish colour. This, powdered and applied to the nose, excites a stronger sneezing than white hellebore.

The young tops of this plant, boiled and buttered, have sometimes been given in the belly-ache. One or two of the seeds, powdered, and added to any other purging medicine, add considerably to its operation, and have therefore been compounded, by some practitioners, with the *pilul. ex duabus*, to quicken their effect, and keep them moist.

114. CASSADA. — *Iatropba foliis palmatis, carne sublactea*, &c.

Browne, p. 349.

This plant, which furnishes the Brasilians with great part of their sustenance, is much cultivated in this island. It thrives best in a free, mixed soil, and is propagated by the bud, or germ, in the following manner. The ground is first cleared, and hoed into shallow holes, of about ten inches or a foot square, and seldom above three or four inches in depth, and without much regularity. A number of the full-grown plants being provided, they are cut into junks, of about six or seven inches in length, as far as they are found to be tough and woody, and well-furnished with swelling, full-grown, hardy buds. Of these, one or two are laid in every hole, and covered over with mould from the adjoining bank. The ground must be kept clean till the plants rise to a sufficient height; the plants moulded up; and the growth of weeds prevented. They come to perfection in about eight months; but the roots will remain in the ground for a considerable time uninjured, if the want of fresh plants, or bad weather, should make it necessary to cut the stalks. When the leaves wither, and the plant blossoms, the roots are fit to dig. They are then (in good land) nearly as thick as a man's thigh. They are taken out for use, as occasion requires, and then prepared, viz. after being well-washed and scraped, and then rubbed into a kind of pulpy meal with an iron grater, they are put into strong

linen bags, and placed in convenient presses. The common method of pressing is as effectual as any. One or more large flat stones are placed to a proper height upon the ground, near the root of some old tree, in the side of which a hole, or notch, has been cut equal to the elevation of the stones. Into this hole is fixed the extremity of a strong plank, or beam, which stretches over the stones by way of a lever, pressing with all its weight upon the cassada-bag, which is laid upon the uppermost stone. Several heavy loads are fixed at the other end of this lever, or as many as it will bear. And in this state the bag remains until the juice is thoroughly squeezed out. After this operation, the meal is spread in the sun for some time; then pounded in a large, wooden mortar, passed through a coarse sieve, and baked on flat, circular, iron plates, fixed in a stove. The particles of the meal are united by the heat, and, when thoroughly baked in this manner, form cakes, which are sold at the markets, and universally esteemed a wholesome kind of bread [y]. Toasted and buttered, they are very relishing, and used by most families. They are also made into very delicious puddings. The juice of the root is of a poisonous nature; but, when boiled, it throws up a scum, which being taken off, the remainder is found, by long experience, to be an inoffensive and agreeable drink, much resembling whey in taste and quality.

But, however noxious the juice may be in its crude state, unmixed with any corrective, it is well known that hogs eat the fresh roots with great avidity, and suffer no inconvenience: either, therefore, their stomachs and intestines are formed to assimilate it into wholesome nourishment, or they correct its bad qualities by the surrounding mould swallowed with it, or by some antidote which instinct prompts them to eat after it.

The Negroes boil and eat the leaves as a green. It is supposed, that the action of the fire carries off its malignant qualities.

What is not a little extraordinary, the meal, not yet discharged of its juice, makes an excellent salve, and seldom fails to heal the worst sores; and, to improve its effect, it is sometimes mixed for

[v] The Spaniards, when they first discovered the West-Indies, found it in general use among the native Indians, who called it *Cazálli*, and by whom it was preferred to every other kind of bread, on account of its easy digestion, the facility with which it was cultivated, and its prodigious incense.

this intention with the fresh leaves of tobacco pounded. Several accidents having happened to Negroes newly-come to the island, who have ate of the root roasted without expressing the juice, I shall mention what remedies have been proposed.

The symptoms, consequential to swallowing the poison, are, first, a pain and sickness at the stomach, a tension and swelling of the whole abdomen ; then violent vomiting and purging, giddiness of the head, a cold sensation and shivering, dimness of sight, swoonings, and death, in a few hours, if no relief is given.

The expressed juice is very sweet to the taste. It soon putrefies, and breeds worms, called by the Indians *topura*, which undoubtedly draw their nourishment from those particles that are so baneful to mankind ; and, when dried and pulverized, they have formerly been applied to the most mischievous purposes by the Indians and Negroes ; who, having conveyed some of this powder under their thumb-nail, presented a cup, or other vessel, of drink to the person they intended destroying ; contriving, at the same time, to suspend the tip of their thumb in the liquor, in order to impregnate it ; for which reason, whenever a Negroe was seen to let the nail of his thumb grow to an extraordinary length, he was always suspected of having some bad design of this sort in agitation. The common remedy in Brasil is, first, to administer a vomit of *ippecachuana* ; and then the juice, or powder, of nhambu. The nhambu is a plant, described by Piso, p. 228, and 310. It has a fibrous root, from which rises a moderately thick, hard stalk, knotty, rough, and hairy ; so are the branches. The leaf is broad, green, and succulent, largely indented, or divided. From between the leaves come the flowers, on a long foot-stalk, which are single and monopetalous. Then follows the fruit, round, about the size of a small cherry, covered over with a chefnut-like, rough coat, in shape like that of the *ricinus*, and containing flat, oval seeds, of a shining, yellowish, brown colour. Every part of this plant has a hot, spicy, pungent taste, with an aromatic flavour. The bark, leaves, and fruit, are the parts generally used.

Bluet, in his account of Guiney, mentions, that a cow, having drank a hearty draught of the juice, went and fed on a shrub which grows common in Africa, called *sensitive plant*, and received not the least hurt.

It seems probable, that the sensitive plant of Guiney is the nhambu of Brasil, or, at least, that the nhambu is a species of sensitive, and agrees somewhat in description with a species found growing naturally at Campeachy by Dr. Houston, which is thus described, *mimosa, foliis subdigitatis, pinnatis, caule aculeato bipido*; "sensitive plant, with winged, handed leaves, and a prickly, hairy stalk." The flowers are white, and succeeded by prickly pods. It has also some affinity to the black-bead shrub, or large-leaved mimosa, of Jamaica; a shrubby sensitive, and called, by some, the *bumble plant*, which has a declining, prickly stalk, with pods growing in clusters, with prickly coverings. It deserves experiment, whether strong decoctions of the leaves and seeds of these species, or an extract made from them, or the crude juice of the leaves, with powder of the seeds, might not counteract the effects of this poison, tried on dogs and cats, or on fowls.

Dr. Browne advises the following remedy, to prevent any mischievous effect.

"Rx a little mint-water, and *sal absynthi*. (or salt of wormwood), "and mix."

If the poison has not been swallowed any considerable time, he asserts, that this, easy preparation will calm the most violent symptoms.

The virtue of the fixed salt of wormwood consists in its being a good febrifuge, and very successful in removing tertian agues, possibly by promoting the circulation of the blood, and attenuating it when it is agglutinated and sluggish.

The effects of the nhambu are similar; for it undoubtedly acts by its heat and pungency, stimulating the fibres to action, warming the stomach, and assisting the blood's circulation.

The poison is of what is called the cold kind; and hence the best antidote to it must be a medicine of a warm, active, and attenuating quality. The Indians, therefore, of Guiana give a mixture of red pepper bruised in rum.

The leaves of the *mimosa Jamaicensis*, Jamaica sensitive, without prickles, have been ranked among vegetable poisons; but the root is said to be an antidote to the effect of the leaves.

The cassada-bread, mixed with milk and a little sweet-oil, makes an admirable poultice for ripening and breaking tumors.

115. SWEET CASSADA. — *Iatropba, foliis palmatis, carne nivēa*, &c.
Browne, p. 350.

This resembles the former plant, and is cultivated after the same manner; but the root is free from any of the ill quality observed in the juices of the other sort. It is roasted or boiled for use: but the latter is thought the best method of dressing it; for, in this state, the outward part is commonly brought almost to the state of a jelly, and is extremely delicate and agreeable. A fine flour is made from it. This species bears a large berry.

116. { NEGROE-YAM. — *Dioscorea, radice tuberosa lutea*.
{ WHITE-YAM. — *Dioscorea, radice alba aut purpurea*.

Both these plants are cultivated here universally for food; but the former, which is of a yellowish colour, is coarse, frequently stringy, and not so much in esteem as the second, vulgarly called, by the Negroes, *bochara-yam*.

The roots grow to a considerable bulk, and above a foot in length; are mealy, easy of digestion, palatable, and nutritious.

Both plants are propagated by a slice from the root, so cut as to have a little of the skin upon it, by which alone they germinate; for the roots have no apparent germs, but cast out their weakly stems from every part of the surface alike. They are put into convenient holes (two or three in each), generally dug pretty regular, and about a foot and an half, or two feet, square. These are afterwards filled from the adjoining banks; and the whole piece covered with cane, or other trash, which serves to keep the ground cool and fresh, and to prevent the growth of weeds, from which these plants must be carefully preserved, until they grow sufficiently to cover the mould themselves. They may be planted about January and February, and will be fit to dig about Christmas, or in August, in order to come in about May following.

When the root is dug up, care is taken not to wound it, or as little as possible; for such as are cut throw out sprouts very early, and are seldom fit for any thing, except planting, if they hold out even till the proper season comes round. After they are taken up, and cleared from the mould, they are rubbed over with wood-ashes,

and piled on hurdles raised above the floor in a dry room, admitting the air to pass between them, and prevent their sweating, which would soon rot them, when any quantity happens to be laid in an heap. Twelve months are generally allotted for their coming to maturity from the time of their being planted; but in some parts, where well-supplied with moisture, and brought forward with a hot sun, they will ripen earlier than in others.

117. PLANTANE-TREE. — *Musa, fructu majori triquetro.*

This is cultivated in every inland settlement, or wherever the soil and seasons are propitious to it, with great care, as the fruit supplies a principal part of sustenance to the inhabitants, black and white. It thrives best in a cool, rich, and moist soil, and is commonly planted in regular walks, or avenues. It is propagated by the suckers, which spring up from the roots, set at the distance of six or eight to ten or twelve feet apart, and the latter more commonly, as the root throws up, every year, a number of young sprouts, and consequently require a considerable space to be allowed for their extension.

When the bunch, or cluster, of fruit is gathered, the stem gradually decays; to prevent, therefore, the young suckers from being injured, the stem is always cut down close to the ground when the fruit is wanted, in order to assist the growth of the new plants.

The fruit is generally used when it is full-grown; but, before it ripens, this is known by the colour, which turns yellow, as soon as it begins to grow ripe. It is peeled, and either roasted in embers, or boiled; and thus served up at table, instead of other bread. Many white persons, after being accustomed to it for some time, actually prefer it to bread, especially when young and tender. The Negroes commonly boil it in their messes of salt-fish, beef, or pork-broth, and find it a very strengthening wholesome food. When the fruit is ripe, it becomes lusciously sweet: it may then be made use of for tarts, or sliced and fried in butter. The Spaniards dry and preserve it as a sweetmeat; and, perhaps, it is wholesomer than many other sorts of confectionary that are more in vogue. The ripe fruit and maize together are the best food for

hogs

hogs put up to fatten ; and give their flesh and fat a most exquisite flavour and firmness.

The leaves are dried, and made into mats, and stuffing for matrasies, pads, &c. The fresh leaves are superior to melilot for dressing blisters, and generally in use for this purpose. Upon thrusting a knife into the body of one of these trees, there issues out a large quantity of a limpid water, of a restringent quality, which has been given, with the greatest success, to persons subject to a spitting of blood, and in other fluxes.

118. BANANA. — *Musa, fructu breviori oblongo.*

The fruit is generally used when ripe ; it resembles the plantane, but has rather a softer, mellower taste, and more proper for tarts and fritters. The leaves of this tree are supposed to have furnished our first parents with the modesty-pieces, or aprons, mentioned in scripture. A very excellent drink is made from the juice of the ripe fruit fermented, most resembling the best South Ham cyder. A marmalade is likewise made with it, esteemed an excellent pectoral, good for coughs and hoarseness, lenifying the sharpness of the catarrhal humours, cooling, and refreshing.

The Spaniards conceit, that, on cutting this fruit athwart, there appears the form of a cross in the middle, and, out of the superstitious reverence they bear to this figure, they never cut, but break it.

The fruit of these two species may be regarded among the greatest blessings bestowed upon the inhabitants of this climate. Three dozen plantanes are allowed sufficient to serve one man for a week, in lieu of other bread, and will support him much better.

The green leaves of both species are an excellent fodder for horses ; and, as their juice is somewhat restringent, preserve them from scowering too much after grazing on sour or salt-marsh grass.

The banana fruit, ripe, has been noted for its efficacy in correcting those sharp humours which generate, or accompany, the fluxes, to which Europeans are often subject on their first coming into the West-Indies. It is somewhat surprising, that captains of ships in this trade do not lay in a quantity of the roasted-fruit of these trees, or plants, for their sea-store, especially as it might be

kept

kept for a long time, packed in the dried leaves, and stowed in tight casks, and requires only a fresh roasting, or heating, when wanted for use. It is a cheap, hearty food, and would furnish the sailors with a wholesome and agreeable change, after a tedious repetition of salt-meat, and not only keep them free from scorbatic foulnesses, but serve the purpose of other vegetable aliment not so easily to be had at sea, and certainly much better for them than mouldy biscuit, full of weevils and dirt.

119. WILD PLANTANE. — *Musa, spadice erecto, &c.*

This beautiful plant grows wild in most of the cooler mountains and gullies of Jamaica. In growth and leaves it perfectly resembles the other species, but differs widely in the more essential parts, and produces no fruit. The stem, or body, of it is somewhat smaller, but equally succulent.

I have seen, in this island, very large tracts of land, which once were considerable sugar-plantations, but, in length of time, became so exhausted, as not to make any proportionable return to the labour bestowed on them, and have therefore been thrown up, and deserted. Where this has happened from a change of seasons, and the want of showers, the disaster is incurable; and such land cannot be restored to fertility, except by the return of favourable weather, or by artificial waterings; the first is scarcely to be hoped for; the second is not always practicable. But there are other lands, which have been worn out with incessant cultivation, and not so destitute of showers. In many places, it is usual to let them lie fallow for two or three years, neglecting what is absolutely requisite during this interval of time; which is, to hoe-plough them, once a year at least, before the weeds feed and ripen; so that the rains and dews, falling upon them, have only assisted the growth and multiplication of weeds in such a manner, that they cannot afterwards be exterminated. It has been demonstrated, that water (more particularly rain) is the principal support and *pabulum* of all vegetables. In their state of dissolution, the more rarefied particles of the fluid, they have imbibed, re-ascend into the atmosphere; but much of the remainder becomes earth, affording a solid and actual sustentation and addition to the surface on which it falls. For this reason

reason, probably, in the modern, improved state of husbandry in England, turnips are applied as an excellent manure for impoverished lands. In Jamaica, the same root is not equally fit for the purpose, because it does not grow here to any considerable bulk, nor is it so succulent as in England. I would propose, therefore, to substitute, in its room, the wild plantain-tree, wherever it can be brought to grow. This plant is, in truth, a vegetable *siphon*, full of water; and as it never fructifies, so it cannot probably exhaust any soil. A walk of these suckers might be planted on impoverished land in a seasonable year, and suffered to stand for three years; and the ground hoed only till the plants appear to have struck root, and to rise with vigour. In the third year they might be cut down, and left to rot upon the surface. To support them in the early part of their growth, it is necessary to keep the ground clear of weeds about them. Hoeing performs this, and loosens the earth; which facilitates the penetration of rains and dews through the surface. When they are tolerably well grown, their broad, expanding leaves will shade and cool the ground in such a manner, as to preserve it always moist and open, and suppress the ascent of weeds: from this period, therefore, hoeing will not be so necessary. I should not recommend the fruit-bearing plantain for this design, as it certainly exhausts land very much, and therefore would add to the evil, instead of removing it.

The stems, or trunks, of any of these species, cut in long junks, are the best provision that can be laid aboard the homeward-bound ships, for support of the live-stock. Sheep, goats, cattle, hogs, and poultry, are all fond of it; and, as the stems preserve their succulence for a long space of time, the stock fed with it require little or no water. For the smaller animals the junks are chopped into small pieces.

They are stowed behind the mizzen-chains, where they do not in the least incumber the ship.

122. BONAVISTE-BEAN. — *Phaseolus maximus perennis*, &c.
Sloane's Cat. 67.

This is cultivated in most parts of the country, and thrives well in almost every soil. The bean is a wholesome palatable food, and in general use.

123. KIDNEY-BEAN.—*Phaseolus*. 5. Browne, p. 291.

This is likewise every where cultivated; and the seed, or bean, left to dry; then gathered, and kept for use, chiefly as an ingredient in pepper-pots.

124. LIMA BEAN.—*Phaseolus perennis*. 6. Browne, p. 292.

This is esteemed the most delicious bean in the world. It requires a rich soil, and continues bearing four or five years successively.

125. CALAVANCES, or RED BEAN.—*Phaseolus*. 7. Browne, p. 293.

This is sown at any time after rains; and, in six weeks time, the fruit is large enough to eat green. It is a hardy plant, very much cultivated, thrives in every soil; and the bean is esteemed a wholesome, strengthening food. The Chinese have a white sort, called *tao*. They plant it on dry hills. The Europeans buy, of this sort, great quantities for sea-store on their return from China. The East-India soye is prepared in the following manner [z]. Take a certain measure; for instance, a gallon of calavances; let them be boiled till they are soft: also a gallon of bruised wheat, and a gallon of common salt. Let the boiled calavances be mixed with the bruised wheat, and be kept covered close a day and a night in a warm place, that it may ferment. Then put the mixture of calavances and wheat, together with the salt, into an earthen vessel, with two gallons and an half of common water; and cover it up very close. The next day stir it about well with a battering stick, or a churn (the barrel-churn, which is made with slips of board, placed perpendicular to the sides within, about three inches in breadth, and running the length of the barrel, mounted on an axis at each end placed on a frame, and turned with a windlass-handle, would answer best for this purpose), and for several days, twice or thrice a day, in order to blend it more thoroughly together. This work must be continued for two or three months; then strain off and press out the liquor, and keep it for use in kegs, or small barrels. The older it is, the clearer it will be, and of a proportionably higher value. After it is pressed out, you may pour more

[z] Ellis.

water.

water on the remaining mass, then stir it about violently; and, in some days after, you may press out more soye.

126. BLACK-EYED PEA. — *Phaseolus*. 8. Browne, p. 293.

This is much like the foregoing, and thought by some to be rather more palatable.

127. CUCKOLD'S INCREASE. — *Phaseolus*. 9. Browne, p. 293.

This resembles the calavances in size and manner of growth. It is a profitable pulse, and much cultivated.

128. SUGAR-BEAN. — *Phaseolus*. 10. Browne, p. 293.

This is generally cultivated, and served up at every table. It is of easy growth, and continues to bear a considerable part of the year.

129. BROAD-BEAN. — *Phaseolus perennis*. 12. Browne, p. 294.

This is cultivated more for the sake of its shade than its fruit; though the latter is equally wholesome and palatable, and frequently seen at the best tables.

There are some other varieties, as the great Angola, the clay-coloured, &c. Sir Hans Sloane reckons above twenty-one sorts.

130. The PIGEON, or ANGOLA PEA. — *Cytisus fructicosus, ramosus, triphyllus*. Browne, p. 296.

This shrub is chiefly cultivated by the Negroes in their gardens and grounds, because it is a perennial, and does not require much care. It bears a great number of pods. The seeds, or peas, are a hearty wholesome food, and generally in use, green or dried. The leaves are very good fodder for cattle.

131. ENGLISH BEANS and PEAS.

The various sorts of these, brought in seed, are cultivated here, but thrive best in the mountains, particularly the beans: but I have seen exceedingly fine peas in the lowlands, which generally come to maturity in two months. They thrive well in brick-mould, and in the hills near Spanish Town, the Liguanca mountains, and all

the other inland mountainous parts. The large marrow-fat pea, which came from Cuba, is the most in esteem, and answers well in most parts of the island.

132. CORAL, OR RED-BEAN-TREE.—*Erythrina arborea, spinosa et non spinosa, &c.*

This grows in many parts of the island. It is propagated by the slips or cuttings, or by the seed ; it blossoms in three years from the seed, and has young pods about the middle of February ; and by the latter end of March the seed is full grown, and of a beautiful red colour. The prickly species make good fences. They rise to the height of sixteen or eighteen feet. They were probably both introduced by the Spaniards formerly, to be planted among their cacao walks, where they lay most exposed to the weather, to break the impetuosity of the wind ; and hence their common appellation of *madre de cacao*, or mother of cacao.

A seed of the bean-tree, being planted by a gentleman in his garden, for experiment-sake, it was found, in two years nine months, to have grown to the height of seven feet, measured from the base or root to the branches. The quickness of its ascent, and sturdiness, prove it admirably well adapted to be the protector of the young tender cacao plants.

133. PINDALS, OR GROUND-NUTS—*Arachis.*

The plant, which produces these nuts, was first brought from Africa.

They resemble a filbert in colour, shape, and size. They are found in the earth, environed with a thin cista, which contains two or three kernels, and several of these bags are seen adhering to the roots of one plant. When ripe, and fit to dig, the covering, in which they are contained, appears dry, like a withered leaf ; this being taken off, the kernels, or nuts, are immediately disclosed to view, reddish on their outside, and very white within. They have somewhat of the almond flavour, but more of the chestnut ; some think them equal to the pistachia. They are nourishing, and often given as food to Negroes on voyages from Guincey, where they pass under the name of *gubagubs*.

They

They may be eaten raw, roasted, or boiled. The plant thrives best in a free soil, and warm situation. In Southern climes vast crops of these nuts are said to be produced from light, sandy, and indifferent soils. Doctor Brownrigg, of *North Carolina*, transmitted some account of the value of these nuts to the Royal Society. From a quantity of them, first bruised, and put into canvas bags, he expressed a pure, clear, well-tasted oil, useful for the same purposes, as the oils of olives or almonds.

From specimens both of the seeds and oil, produced before the Society, it appeared, that neither of them were subject to turn rancid by keeping. The oil in particular, which had been sent from Carolina eight months before, without any extraordinary care, and had undergone the heats of the summer, remained perfectly sweet and good. A bushel of them yielded (in Carolina) without heat, one gallon of oil, and with heat, a much larger quantity, *but of inferior quality*. It has been justly supposed, that, from a successful prosecution of this manufacture, the colonies may not only be able to supply their own consumption, in lieu of the olive oil annually imported from Europe, but even make it a considerable article of their export.

The nuts bruised, and applied in form of a poultice, take away inflammations, caused by the venomous stings of bees, scorpions, wasps, &c.

134. CERASEE—1. *Smooth-leaved*; and, 2. *Hairy*—1. *Momordica glabra*. 2. *Id. hirsuta*.

Both these plants are cultivated in many parts of the island, and especially in the town-gardens. The internal part of the fruit is of a very elegant red colour, and filled with several large red seeds, in size and form resembling those of the tamarind. If the point of the smallest pin or needle is stuck into any part of the fruit, it will immediately fly open in divisions, turning, as it were, inside out, as if by a kind of magic touch. The plants make very beautiful arbours. The leaves and fruit, externally applied, are esteemed great vulneraries. The leaves boiled, or a decoction of them, is taken to promote the lochia and in obstructions of the liver and mesentery. The root powdered, and given with cream of tartar, from a scruple to forty grains, is answerable to the like intention; and a distilled water is made from

the leaves and fruit, mixed with salt of nitre, recommended as a lotion for the St. Anthony's fire, and pimples in the face. The pulp of the fruit is purgative, and an oil may be obtained from it, which cures burns, and takes away scars.

135. CLAMMY-CHERRY—*Malpighia arbor baccifera*.

This beautiful tree grows to a considerable size in the lowlands.

The berries come out in clusters of a fine red colour, about as big as a middling cherry, having a soft, sweetish, clammy pulp, enveloping a number of small seeds.

It blossoms in February, and has ripe fruit in April. The turkeys, and other poultry, nay even hogs and dogs, are extremely fond of the berries, and are thought to fatten upon them. The fruit of the bastard cherry serves likewise for poultry.

136. BARBADOES CHERRY—*Malpighia, punici malifacie*.

This shrubby tree has much the appearance of the pomegranate plant.

The fruit is of the same size and form as the common English cherries, of a light-red colour, a pleasant subacid taste, and very succulent; it makes very agreeable tarts, and excellent jellies.

137. SEA-SIDE-GRAPE—*Coccolobis uvifera littorea*.

This tree is very frequent on all the low sandy shores. It is easily propagated in other parts of the country by slips or cuttings. It grows to a large size, and is then looked upon as a beautiful wood for cabinet ware.

The berries are about the size of common grapes, and, when ripe, have an agreeable flavour, but the juice is restringent; and for this quality it is remedial in fluxes, particularly such as may ensue from drinking the brackish water, common to the places where they grow adjacent to the sea. There are some other varieties of the *coccolobis*, whose fruit possesses the like quality.

138. JAMAICA GRAPE-VINE—*Vitis sylvestris*.

This grows spontaneously in the woods; the fruit appears in bunches, resembling the English elder, of the same bigness and complexion,

but endued with a pleasant, vinous flavour. It used to furnish the hunters with refreshment, and is no less grateful to the animals pursued. It is also known by the name of *water-withe*; for the vine is so full of juice, that a junk of three feet length will yield near a pint of clear, tasteless water, which has saved the lives of many who have wandered long in the woods, without any other liquid for their support. For this reason it deserves to be cultivated in all those parts which are destitute of springs, as it is a natural reservoir, collecting and keeping a pure and salutary water in the driest, hottest seasons; and has been observed to thrive exceedingly well in the Red Hills, and other rocky, mountainous districts, where springs of water are most deficient.

The vine produces a large quantity of small black grapes, of a rough taste, which would undoubtedly make an excellent red wine, under proper management.

139. GRAPE VINE.—*Vitis.*

The white and red grape vines, particularly the muscadine, have been introduced here from Europe and Madeira, and seem to thrive extremely well. The bunches grow to an extraordinary magnitude, and the pulp is more fleshy, and less watery, than in the South of France; a difference to be naturally expected from the greater heat of climate, and richness of soil. The muscadine answers better in the lower sites than any of the other species, ripens all its berries near at a time, and with due care might be brought to the utmost perfection. The clusters are very large in the lowlands, the grapes mellow, and might doubtless produce a fine mellow wine, if cultivated in any sufficient extent, and by persons of competent skill. The hills of Healthshire, of Liguanea, the Long Mountains, the Red Hills near Spanish Town, seem all well accommodated to some or other of these vines, selecting the cooler and higher ascents for such as are indigenous to Europe; but the muscadine would probably succeed best in the lower hills of Liguanea, which have a South aspect, and a friable, gravelly surface.

The method in which the grape vines are usually cultivated here, is very absurd. The tendrils are generally carried over frames, or arbour;

arbours, eight or ten feet above the ground, by which means the fruit is deprived of all reflected heat, which is necessary to mature it.

In Madeira, the best vines are mostly growing on slopes, in a South aspect, and trailed within two feet of the earth. The bunches usually sold at the Jamaica markets are ripe only on one side, resembling a joint of meat on a motionless spit, the one half roasted, the other raw. I have seen branches of eight pounds weight, having only the side that faced the sun thoroughly ripened, whilst the other, being constantly shaded from his rays, and elevated too high to receive much impression from the warm vapours of the soil beneath them, remained perfectly green. No person here has attempted hitherto to make wine, it being a business with which our countrymen are very little acquainted; nor perhaps, is it worth while to attempt it, except for domestic consumption; since the French Protestant families settled in the province of South Carolina are entering so largely into this branch, that it is highly probable, they will be able, in a few years, to supply the West India islands, and even Great Britain, with excellent wines, at a much cheaper rate than they are now purchased from foreigners.

140. PINE APPLE.—*Ananas*.

There are several varieties of this delicious fruit; some of which, may have been obtained from seeds; and it is thought that if the seeds were sown frequently, there might be as great a variety procured of this fruit, as there is of apples and pears in Europe. Some of the sorts observable here, are,

The bog-walk pine, of a compressed form, and deep green coat, white flesh.

The same, with a yellow coat.

The pyramidal, or sugar loaf, with yellowish flesh, and deep green coat.

The same, with a yellow coat.

The smooth-leaved, or king pine.

The queen pine, with leaves smooth, or sometimes spiked.

The smaller green or yellow pyramidal, or Montferrat.

Of these the sugar loaf is most esteemed ; it is propagated by the crown arising from the summit of its pyramid, or by the suckers springing from the roots ; but the latter come quicker to maturity. They all thrive best in a brick mould, and warm situation. Some persons cultivate them on the top of small ridges or banks, raised about 18 inches, and disposed in straight rows ; they grow most luxuriantly when they are thus associated together, like the penguin, and the suckers from them are stronger and finer than when the plants are separated to a distance from each other, and their roots are likewise kept cooler and moister. They are subject, especially in a very dry season, to be attacked with a small white insect, which, if not destroyed, will overspread the leaves quite to the root, stop the growth of the plants, and consume their juice.

This is suspected to be the same which frequently does such mischief in long droughts, to the cane pieces, and is called the blast. In order to kill them, it has been recommended to steep the fresh leaves and stems of tobacco, for twelve hours in water, and sprinkle all the plants every day with this water, by means of the common garden pot, till the insects disappear ; the water so impregnated is said to kill these animalcules, without doing the smallest injury to the plants. Some use a sponge ; but this is too laborious and dilatory a method, where the plants are numerous, and all or most of them affected. Perhaps a strong decoction of the tobacco leaves, used when perfectly cool, might be found still more effectual ; the experiment might likewise be practised on cane pieces, by means of a water engine, with a *rose-head* fixed upon the discharging pipe.

The bog-walk pine is not so sweet or agreeable as the others ; and next to the sugar loaf, the Montserrat pine is reckoned most eligible ; there is, however, a variety in their flavour, accommodated to different palates, some being more acid, or more rich and cloying than others.

The fermented juice of the sweeter sorts has been made into a very pleasant wine, and is sometimes mixed in the cisterns that contain the liquor for rum, in order to communicate a more agreeable zest. They are a profitable commodity in this island, either for sale in the towns, or to the shipping ; and some of the fruit is ex-

ported by way of present, preserved in syrup, as they form a very elegant appearance with their crowns, at a desert.

They are now so well known in Europe, that more need not be said of them.

141. WILD-PINE. — *Tillandzia maxima*.

The plants of this class were formerly ranged under the head of the viscus, or parasitical; which, instead of rooting in the earth like other plants, fix themselves, and take root on the bodies and branches of trees.

There is an infinite number of them in Jamaica, some of which may be made to grow upon a broom, or a mop stick, fixed upright in the ground; which proves that they derive their support and growth principally by absorption of moisture from the atmosphere.

The wild pines, are by much the largest of this class, and very frequent in this island, in the thick woods of the interior mountains; where they are seen growing in abundance between the forks, and on the larger branches of the bigger trees; and by the easy bend, and hollow base of the leaves, become natural reservoirs, which catch water from every shower that falls upon them, sufficient to last during the longest continued droughts, and at hand to supply the thirsty hunter, or to refresh other animals. Nothing can be more signal than the benevolent and wise provision which the Deity has made in the example of the vine before mentioned, and this plant, for remedying those ill effects which the inclemency of weather may occasion in this climate to the inhabitants. In the deep recesses of the forest, and where the soil is rich, and the trees of great magnitude, the wild-pine presents its cooling beverage at every turn; in the more sterile rocky situations, where the trees are stunted, and the pine cannot vegetate so luxuriantly, we find its place supplied with the wild-vine; there is no end to our admiration of the Divine benignity, nor ought we to fix any to our gratitude.

142. LIME. — *Citrus fructu ovato, minori, acido.*
Id. *Fructu rotundo.*

This bushy tree does not grow to any considerable height or bulk; it is commonly used in fences. The fruit is well known, as a principal ingredient in punch. If intended for exportation, it should be gathered when a yellowish tinge first begins to appear on some part of the rind, and will keep well, hung up in an airy part of the ship in nets; or, where a quantity is sent, it may be packed up in dry corn husks, and stowed in a cask which has some air-holes made in it. If a method could be fallen upon of drying the ripe fruit in Jamaica, until the coat grew perfectly hard and tough, it would bear the voyage much better so preserved, and go in excellent condition for use; and this, I apprehend, may be done by exposing it, spread out on a platform, to the hot sun, after the manner of pimento, for a week or two before it is packed for exportation. The unconcocted juice of the green fruit is generally injurious to weak bowels.

This fruit, as well as the following, makes an excellent sweetmeat, cleared of the pulp, and prepared with the best clarified syrup.

The bark and fibres of the root are excellent strengthening aperitives, and found frequently effectual in obstinate febrile cases, as well as in weaknesses and obstructions of the bowels. The leaves are generally used in discutient baths; and the fruit in a variety of cases. The crude juice, mixed with salt of wormwood, is given in the state of ebullition in fevers, and commonly used in the composition of saline draughts. The fruit is roasted, and the pulp applied to cleanse ulcers. It answers all those intentions where a livelier sub-acid than that of the lemon is required.

The Negroes take the young fruit soon after it is formed, or when it is about the size of a small hazel-nut, pare off the rind, which they beat into a fine pulp, and with a hair pencil apply it carefully to the lids of sore eyes, for a cure. It is supposed, this rawness of the eye-lid, accompanied with a humour, is generally caused by worms, which lodge in it, and that this application destroys them. This hint is worth a further attention, since the animalcules, if they really lodge there, may be discoverable by proper glasses; and hence the knowledge obtained, whether the application would be proper, or otherwise.

There are varieties of this fruit. — The small round lime; the large oval; the bergamot; the sweet lime.

Next follow the lemons.

143. THE COMMON, or LISBON LEMON. — *Citrus vel Limo arbor.*

These differ little, except in the roughness, or smoothness, and diameter of their coat.

144. ST. HELENA LEMON. — *Citrus fructu majori, acido ovato.*

This is cultivated for the largeness of the fruit, one of which will yield above half a pint of juice; and seems to be a milder sub-acid than the common lemon.

The efficacy of lemon juice in preventing the sea scurvy, has been commended by all modern writers on the subject, and was not unknown in the earlier times of our navigation. Sir James Lancaster, in his voyage where he was general in the East Indies, in the year 1601, carried with him several bottles of lemon juice; and by giving three spoonfuls to each sailor in the morning, who then fasted till noon, kept them entirely free from, or cured them of, this terrible disorder.

The juice of limes and lemons depurated, and mixed with good rum, makes the liquor called *shrub*, which may be considered as an article of export.

145. SOUR ORANGE, or SEVILLE. — *Aurantium foliis, ovato-lanceolatis, fructu acido.*

146. SWEET, or CHINA ORANGE. — *Aurantium foliis lanceolatis, acutis, fructu dulci.*

147. SHADDOCK. — *Aurantium foliis, ovato-lanceolatis, crassis, fructu maximo.*

These are so well known, as to require no description. The first grows wild in many parts of the woods, and is but little regarded. The second varies much in flavour, and appearance of the coat, occasioned probably by the difference of soil and situation. I am persiuated, that if pains were taken, these fruits might be brought here to the utmost pitch of perfection.

They

They thrive best in a brick-mould soil; I have seen the China orange, produced from a tree growing in such a soil, so exquisitely sweet, that when the fruit was ripe, the whole rind was covered with a *saccharine farina*.

The shaddocks, in general, are but indifferent; most of them inclining to a white pulp or flesh, and a watery bitterish juice, greatly inferior to the East India fruit. Mr. Miller accounts for this by remarking, that by constantly raising these trees from the seeds, the fruit degenerates continually; whereas, if the inhabitants would only *bud* or inoculate from the good sort, they might have it in as great plenty as they pleased: but that they resign the whole to nature, seldom giving themselves any further trouble, than to put the seeds in the ground, and leave them to grow as nature shall incline. This observation of his is perfectly true; and, perhaps, their practice is not so much the effect of carelessness, as the want of knowing how to perform the *inoculation*; for which reason, I shall give the method recommended by that ingenious writer, which is very practicable in Jamaica, and where we may hope to see it adopted; since it is surely some satisfaction to possess so favourite a fruit in its most perfect and delicious state, whether for consumption within the island, or for exportation. I am the rather induced to this, upon finding that oranges are an article of export from some of the Northern colonies, where they certainly cannot be brought to the same degree of goodness, of which they are capable, with moderate culture, in this island; for, in fact, the finest China orange I ever ate in England, was not comparable to the worst I have tasted in Jamaica.

The exports from Charles Town, South Carolina, in the year 1747, comprehended 296,000 oranges; in 1761, 161,000. Whence it appears, that this fruit is as much an established commodity for their export, as it is at Lisbon, or Seville, and may, with propriety, be made such at Jamaica.

The manner of performing the inoculation is as follows: you must be provided with a sharp penknife, having a flat haft (the use of which is to raise the bark of the stock to admit the bud), and some sound mat, which should be soaked in water to increase its strength; the various barks used for making ropes in this island, will answer this purpose full as well. Then having taken off the cuttings, or young shoots, from the trees you would propagate, you should choose a smooth part of the stock,

stock, about five or six inches above the surface of the ground, if designed for dwarfs; but if for standards, they should be budded six feet above ground: then with your knife make an horizontal cut cross the rind of the stock, and from the middle of that cut make a slit downwards, about two inches in length, so that it may be in the form of a T; but you must be careful not to cut too deep, lest you wound the stock; then having cut off the leaf from the bud, leaving the foot-stalk remaining, you should make a cross cut about half an inch below the eye, and with your knife slit off the bud, with part of the wood to it, in form of an escutcheon. This done, you must, with your knife, pull off that part of the wood which was taken with the bud, observing whether the eye of the bud be left to it, or not (for all those buds that lose their eyes in stripping should be thrown away, being good for nothing); then, having gently raised the bark of the stock where the T incision was made, with the flat haft of your knife, clear to the wood, you should thrust the bud therein, observing to place it smooth between the rind and the wood of the stock, cutting off any part of the rind belonging to the bud, which may be too long for the slit made in the stock; and so having exactly fitted the bud to the stock, you must tie them closely round, beginning at the lower part of the slit, and proceeding to the top, taking care that you do not bind round the eye of the bud, which should be left open. When the buds have been inoculated two or three weeks, those which remain plump and fresh, you may depend are joined; and at this time the bandage must be loosened, which if not done in time, will pinch the stock, and greatly injure, if not destroy, the bud.

The directions I shall insert hereafter, with regard to the transportation of plants and fruits from one climate to another, may furnish hints for the method of packing the fruits of this class, when designed for export.

The rinds of the orange, and citron which likewise flourishes here, have many medical virtues; and, when preserved, are applied to a variety of culinary uses; however, the high duties on such confectionary discourage their exportation in this form. But the distilled water obtained from their flowers might be made here in large quantity, and great perfection, for export, and would answer in point of profit. A person skilled in this manufacture might, by variously blending the

different flowers of the several species, increase the value and demand for it at home. The citron water constitutes a separate, and no mean article, for commerce. The smaller shaddock, or *forbidden fruit*, is preferred by some palates to the larger, for its superior sweetnes.

The seeds of all the species have a bitterish, but pleasant taste, and, doubtles, would make very good emulsions, which might be successfully used, when the stomach is weak and languid, and cannot bear the stronger bitters; nor is it improbable, but they may prove an excellent mixture with milk in consumptive cases. They are very successfully administered in dry belly-aches, and convulsive spasms; and one of the most effectual remedies that can be used to restore weakly limbs to their former vigour; but it should be continued for some time, aided by regularity and other assistants, and used before the parts are emaciated.

The shaddock is generally in perfection in December; the orange and lemon species are to be had all the year round.

148. WATER LEMON. — *Pafflora (4) foliis cordatis productis, &c.*
Br. p. 328.

This grows frequent in the woods, and supplies the wild hogs with a great part of their food in the season. It bears a beautiful flower; the fruit is a pleasant sub-acid, cooling, and highly refreshing in fevers; it is a climber, and makes very fine arbours.

149. LIQUORICE WEED, or SWEET-BROOM WEED. — *Scoparia erecta ramosa, &c.*

150. WILD LIQUORICE, or RED-BEAD VINE. — *Glycine foliolis pinnatis, spicis nodosis axillaribus.*

The first grows, by a branched stalk, to the height of 18 or 20 inches. The whole plant, especially the slender shoots at the top, is frequently used in diluting and pectoral infusions, and may deservedly be considered as an excellent vulnerary.

The European liquorice grows well in this island, but it is inferior in virtue to the second plant above-mentioned, which climbs in all the hedges on the South side, and winds itself about any shrub in its neighbourhood.

The stalks are about the size of a goose-quill, set with small winged leaves, equal in number on each side, and ranged opposite to one another.

ther, which possess the exact liquorice taste. The pods contain three or four scarlet peas, with a black spot, which in the East Indies and Africa are strung for necklaces. A strong decoction of the leaves, boiled afterwards into a thick syrup with sugar, is frequently given for a cough, and generally found to be a certain remedy. An infusion is likewise made from the leaves and tops for the same intention. It opens both the body and the skin very mildly, and helps expectoration.

The seeds are of a very deleterious nature; and, when bruised, cannot be taken inwardly without great danger; when swallowed *whole*, they commonly pass intire, and are rarely attended with any of those violent symptoms that accompany the powder, which operates furiously upwards and downwards.

An extract may be made from the roots, no ways inferior to what is obtained from the roots of liquorice.

151. MELON. — *Melo.*

There are several varieties of the melon kind here, where they thrive exceedingly well, and with little trouble or attention.

The varieties consist in the shape, whether round, oval, compressed, or long; the roughness or smoothness of coat; the colour of the flesh, whether white, red, greenish, or yellowish; and in sweetnes and flavour. A gentleman here, the most curious in their cultivation, used to prepare some fine mould in small baskets, in which the seed was sown; these baskets were set in little hillocks of earth, and suffered to decay. I know not the particular reasons for this method, but his fruit was of a superior quality to most. The musk and cantelupe are highest in esteem, grow to a large size here, and arrive at the utmost perfection, particularly the latter kind with a greenish flesh, which (contrary to Mr. Miller's observation in regard to those raised in England) is by far the richest, finest flavoured, and dissolves in the mouth. The musk has no net work about it here as in England, and turns very yellow.

152. WATER MELON. — *Anguria foliis multi partitis.*

This fruit grows here to a monstrous size; the sort which has the red pulp, is preferred to the other. It is more recommended by its good effect in cooling the blood, than by its flavour, which much resembles that of water, slightly sweetened with sugar.

Dr.

Dr. Hasselquist cautions, that this fruit should be eaten with circumspection; for if taken liberally in the heat of the day, when the body is very warm, bad consequences often ensue; and it may occasion colics, loosenesses, fluxes, a foul stomach, &c. It will sometimes chill the stomach like ice, and a too free indulgence in it is thought to nourish and multiply the gourd and tape worms.

The like caution is requisite in regard to all the melon and cucumber tribe, which ought to be eaten sparingly in this climate, and not without some corrective, such as sugar, Madeira wine, or pepper and salt.

The French in the islands use sugar, and sometimes an addition of a little lime juice, with most of their fruits.

153. WILD CUCUMBER. — *Cucumis subhirsutus, minor, sylvestris.*

This grows wild in the woods in great abundance; and the fruit is esteemed a wholesome, agreeable ingredient in soups; it makes a good pickle. The European cucumbers thrive so well here, that they may almost be reckoned indigenous. The tribe of gourds is very numerous; I shall only notice the more useful.

154. SMALL GOURD. — *Cucurbita villosa, fructu pyriformi minori.*

The shells are generally made use of by the Negroes for bottles and water-cups; a decoction of the leaves is given in purgative clysters; and the pulp is often employed in resolutive poultices.

155. SLENDER-WINDING GOURD, or SWEET GOURD. — *Cucurbita fructu longissimo, bipedali, incurvo, obtuso.*

This is cultivated for the sake of its fruit, which, when boiled, is wholesome and nourishing, frequently made into puddings, and particularly relishing with salt meat.

156. LARGE GOURD. — *Cucurbita fructu maximo subrotundo.*

This is cultivated chiefly for the sake of its shell, which grows frequently so large as to contain between 30 and 40 quarts. Dr. Barham speaks of one presented to him which held 36 quarts; and adds, that he carried two to England, which were perfectly globular, exactly of a size, and contained 24 quarts each. Where the *aloës* is manufactured for export, it is commonly preserved in these shells, of middling bulk.

They are generally used here by the Negroes instead of large jars, for holding water, salt, rice, corn, &c.

The Negroes prepare them in the following manner: they make a hole at one end, into which they pour hot water in order to dissolve the pulp; after this they extract the pulp with a stick, and rinse the whole inside thoroughly with sand and water, in order to loosen the fibres that remain, and clear them away. After they are thus cleansed, they are suffered to dry, and are then fit for use. The pumpkin and squash are no less generally cultivated, and the boiled fruit in universal esteem at every table.

157. CHOCHO. — *Sechium*.

This vine is cultivated in most parts of the island, and grows luxuriantly. It makes good arbours. The fruit, boiled, is served up by way of a green, and esteemed agreeable and wholesome. It is likewise used for fattening hogs. With the addition of sugar and lemon juice, it is no bad *succedaneum* for apples, when such a sauce is wanted for pork or goose. The root, boiled or roasted, is extremely palatable and nourishing.

158. PAPAW. — *Carica mas et femina*.

The male and female trees may be propagated by layers. They grow wild in most parts of the island. The flowers, buds, and tender foot-stalks of the female tree are preserved as a sweetmeat, and the long mango papaw or fruit as a pickle, which is very little inferior to the East India mango. The rounder fruit when ripe is boiled, and eaten with any kind of flesh meat, and is looked upon as perfectly wholesome; but eaten raw, it contains an acrid juice, very injurious to the intestines; and so penetrating is this fluid in the green unripe fruit, that, boiled with the hardest salt meat, it will render it perfectly soft and tender. It is said to cause the like effect on hogs, who, if fed with it for any considerable time, are subject to have their guts excoriated with its acrimony. The flowers of the male tree are white, and those of the female yellowish, and much larger; but the sex is plainly distinguishable to the most common observer, by the former never producing fruit.

The green fruit, thoroughly boiled, squeezed, and dulcified with a little sugar and lemon juice, is frequently used as a substitute for apples in sauce and tarts, and resembles them so exactly in taste, as scarcely to be distinguished.

The milky liquor, obtained from the raw fruit, is said to take away warts, and destroy the ring-worm.

The Negroes are possessed with an opinion of the good or bad qualities of particular trees, when planted near any habitation, as to the effects their neighbourhood may occasion to the inhabitants. This opinion seems to be well founded; for as trees (especially in this climate) have a very extensive atmosphere, and diffuse a fragrant or disagreeable odour to a great distance around them, so it is highly probable, that these *effluvia* are impregnated with some of the more essential properties of the tree, from which they are respired; and thus may have a consequence to health, similar to the breath of a diseased person, or the vapour of a perfumed substance. There may also be salutary or noxious qualities in the atmosphere of some, when the particles are so subtle as not to be distinguished by the olfactory sense. The smell of the manchineel fruit has something in it which induces a sensation of faintness and languor. The scent emitted from the opopanax wood, and roots fresh cut, is exquisitely cadaverous and loathsome. The secret agency of these *effluvia* of trees and plants may have a more powerful influence upon human health, than many are aware of.

The Negroes suppose that the papaw trees are very conducive to render the air healthy, and therefore plant them near their houses. The blossoms are extremely odoriferous, and the trunks so succulent, and growth so quick, that they possibly assist to drain the soil, where they are planted, of superfluous moisture. These properties, exclusive of any other, may serve to correct the air, in certain situations. The full-grown papaws, as well as the plantain trees, seem to be good natural conductors of lightning, from the redundancy of aqueous sap which they contain.

159. GUAVA. — *Psidium fructicosum.*

The fruit of this tree, which is common every where in the island, is justly esteemed very agreeable, especially the preserve or marmalade made from it, which might form an article of export to the North American colonies. The wood is extremely tough, and generally

used for cattle bows and mule crooks. The seeds of the fruit are esteemed an excellent restringent medicine in some fluxes.

160. Seven-year VINE, Spanish Arbour VINE, or Spanish WOODBIND.
Ipomea heptadactyla major scandens, flore majori campanulato.

This plant is a climber; and, from the thickness of its foliage, and largeness of the flowers, it is extremely pleasing to the eye; it is chiefly planted for arbours, and spreads to such extent, that it may be carried over an arbour of 300 feet length, from one root. Every part of this plant is purgative, and it was Barham's opinion, that a *scammony* might be made from the milky juice of the root.

161. The GRANADILLA—*Passiflora foliis amplioribus cordatis,*
 is planted for the same intention, grows well from the slip, and bears a most agreeable fruit, which contains a white pulpy fluid, intermixed with the seeds, of a mild subacid taste, and delightful flavour, cooling and medicinal in feverish heats.

162. The Climbing, or VINE-SORREL—*Rumex sylvestris scandens,*
foliis cordato angulatis.

This plant is very common in the woods, and raises itself to a considerable height with the help of the neighbouring shrubs. With its clavicles it lays hold of any thing that is near; and so thick in foliage, that it covers pales or walls intirely. The leaf is thick and succulent, and preserves its verdure throughout the year; it is of an irregular heart-form, increasing more on one side of the middle vein or rib than on the other; and has a very sharp sour taste like sorrel; when it grows in a free open air, the flowers have an agreeable flavour, and are sometimes used in making of whey, where wine cannot be admitted, and other acids are thought too active and irritating to the stomach.

It bears a round berry, first green, but turning black when it comes to maturity; this is sometimes enveloped with a large matted bunch, like dodder, as big as a man's head; and, at the season of the year when this bunch appears dryish and withering, if it is squeezed, there issues a light substance like lamp-black, which will adhere so closely to the fingers as not to be easily washed off. It is

conjectured, this emanation might be of use for staining, colouring, or dying, if the properties of it were accurately examined.

163. RED SORREL—*Hibiscus rufescens, acetosus foliis trilobus.*

164. WHITE SORREL—*Hibiscus luteus.*

The flowers, cups, and capsulæ of these two plants, freed from the seeds, are the only parts that are useful. They differ but little in taste and quality from the common sorrel, except that their acid is stronger, and of a livelier, pleasanter flavour. The acid of the white (or rather yellow flowered) is somewhat fainter than the other. Both are cultivated in most gardens. The flowers are made, with the help of sugar, into very agreeable tarts and jellies; or fermented into a cooling beverage, very cordial in fevers; they also make a very excellent vinegar. They blossom about the month of October.

The syrup prepared with them is thought to exceed that of the English sorrel. The best way of making it is to take the capsules or flower-leaves which are most juicy, and, adding twice their weight of double-refined sugar, put them without any water into a glass vessel, and place it in a sand-heat; the digestion is carried on with a moderate heat, till the leaves are all dissolved, which soon happens, as they are soft and succulent; the red sort yields a beautiful syrup, which will keep much longer than that which is made with water.

The bark of these shrubs is strong and tough, and has the appearance of being adapted to the same manufacture as hemp.

165. ARTICHOKE—*Cynara.*

There seem to be three varieties of the artichoke in this island; the first sort is the common small French; the second the chardon; the third the large French. They are cultivated here, and propagated by slips or suckers, taken from the old roots. The third species has not been long introduced from Hispaniola, and is generally distinguished by the name of the Hispaniola artichoke; it is much superior to the others. I have seen the bottoms of some near twenty inches in circumference. As yet they are chiefly cultivated in the Liguanea mountains, but might undoubtedly succeed as well in all the other cooler mountainous parts, and probably at the North side.

The

The French pickle or preserve them in salt ; but, in this state, they are not near so relishing as when they are fresh.

The ground where they are planted should be well dug, freed from weeds, and so thrown up, as to prevent water from lodging about the roots.

It is best to leave only one shoot and head to each root ; by which means the artichokes will be much the finer and larger. They are profitable articles for the town markets.

166. SAMPHIRES.

There are varieties here of the samphire. The first is the *critmum vulgare*, or common samphire, which grows in all the salt-ground by the sea side, is similar to the British herb, and makes an equally good pickle. The second is the *portulaca azoides maritima procumbens*, or aizoon, with a purple flower, thick, succulent, saline leaf, resembling purslane, and is proper also for pickling. This is called by some the larger turnsole, or heliotrope. The third is the supine, ash-coloured turnsole, or *heliotropium*, of some authors, with a white flower. But the most valuable is the *salsola frutescens*, or *kali fruticosum coniferum* of Sloane, with a white flower, which is common in all the salinas on the South-side of the island. It abounds with alkalious salts, and might be prepared for the British manufactorys of soap and glass : Browne thinks that the azoides, will answer the same purpose ; this is very frequent about Paflage Fort.

The manner of making the *kali* for glass is as follows :

Having dug a trench near the sea, laths are laid across it, upon which are placed the herbs in heaps ; and a fire being made below, the liquor which runs out of them drops to the bottom, which, at length thickening, becomes the *sal alkali* ; partly of a black, and partly of an ash colour, sharp, corrosive, and of a saltish taste. This when thoroughly hardened, is like a stone in consistence, and is fit in this state for exportation.

167. WEST INDIA TEA.—*Capraria, erecta ramosa*, &c.

This plant is very common every where in the savannahs, and about the towns. What Barham says of it may not be thought unentertaining. A Frenchman (says he), captain of a ship, affirmed

to me, as we were walking about our town of St. Jago de la Vega, and observing this plant growing so plentifully, that it was the same as the tea plant of China; that he had lived in that part of the world many years, had seen large fields of it, and the manner of cultivating it, and all the difference was, that the Chinese plant was larger, which he ascribed to their care, and culture of it; and had no doubt, but the Jamaica plant, if it was set in rich ground, and attended with equal care, would grow to a much greater size, than in its wild state.

Father Labat was led into the same mistake, who, finding the *capraria* at Martinico, asserted it to be the real tea-plant.

The difference between them will appear better by comparison.

Capraria.

Stalk.

Rises to the height of three or four feet, woody, rameose, covered with a smooth clay-coloured bark. The branches disposed in no regular order, and very thick-set with leaves.

Leaves.

From one to two inches long, half an inch broad in the widest part, tapering to a sharp point, of a deep-green colour, smooth, thin, serrated at the edges, no foot-stalks, or at most very short.

Flowers.

Come out between the leaves and stalk, standing on a short foot-stalk, very small, white, seeming to consist of five petals, but are only deeply divided into five parts, capsule green.

Chinese Tea-plant.

Stalk.

Rises to the height of five or six feet, woody, rameose, covered with an ash-coloured bark, reddish towards the top. The branches alternate, in no regular order.

Leaves.

From two $\frac{1}{2}$ to three inches long, and near one in breadth in the widest part, elliptical, obtuse at the extremity, and not sharp, as *Kæmfer* supposes; of a deep-green colour, smooth, thin, glossy, serrated, the footstalks very short.

Flowers.

Come out between the leaves and stalk, standing on a short foot-stalk, large, white, consisting of six petals, or varying in number; but when they consist of six, two are less and exterior, greenish, inclosing the flower before it is fully blown,

blown, and four interior, and divided, the capsule green.

Seed.

The *pericarpium* oblong, cylindrical, four-cornered, very small, when dry is of a light-brown colour, contains a number of small brown seeds.

The *pericarpium*, in form of three globular bodies united, has three cells, and three seeds, lodged single, globous, angulate on the interior side, of a reddish-brown colour.

The difference between these two plants is obvious, more particularly in the flowers, seed vessels, and seeds, even from this general description of each; and the distinctions would probably multiply, on comparing the sexual parts of their flowers. Barham himself was satisfied they were not the same, but he seemed to think the *capraria* a synonym: for he adds his opinion, that it may possibly have the same virtue, and mentions a gentleman of his acquaintance, who never drank any other than the West Indian tea; and that, although he could not coil up the leaves so dextrously as they do in China, yet he performed this operation tolerably well; and every person, whom he regaled with it, extolled it as the very best green tea they ever drank in their lives.

It is certainly unknown to what perfection it might be brought, if reclaimed from its wild state, and cultivated in the rich soil of gardens; and it well deserves the experiment of the curious.

The decoction of the leaves, is recommended as an excellent febrifuge.

168. AVOCADO PEAR.—*Persea.*

This tree grows to the size of the largest European apple tree. The pulp of the fruit is in universal esteem in the island; and distinguished by some with the name of *vegetable marrow*; it is generally eaten with sugar and lime juice, or pepper and salt; it has a delicate rich flavour, and is extremely nourishing. There are two species of the fruit, the green, and the red; the latter is preferred, having a firmer, better-tasted flesh than the other; but I have observed that the goodness of both depends entirely upon the place of growth; for the fruit produced in a wild state is small, and often bitter;

bitter; the finest come from the Red Hills near Spanish Town, the Liguanea Mountains, and the inland parts. They are a favourite food with the Negroes, and often constitute the sole support of many of the lazier, who have neglected to stock their grounds with other provision. They are thought great provocatives; and, for this reason it is said, the Spaniards do not like to see their wives indulge too much in them. It is extraordinary, that most creatures are observed to eat this fruit with pleasure; it is equally agreeable to the horse, the ox, the dog, cat, and birds in general. It is in perfection from May to September. The Negroes are sometimes apt to eat it immediately after the May rains, or when it is crude and watery, in which state it occasions fluxes and diarrhoeas. The seed is contained in the center, and rattles or shakes when the pear is ripe, and fit to eat. This seed is hard, wrinkled, and heart-formed. On writing upon a white wall with one of them, the letters turn to a red colour, and will not fade, until the wall is washed, and even then with difficulty. So, if a table-cloth, or rather white linen, is laid upon the seed, and a letter or figure pricked out with a pin, the cloth will be imprinted with the form in a dark yellowish colour, or stain, which cannot easily be got out.

It is seen by the experiment on the wall, that the alkali of the lime or plaster on the surface fixes the juices of this seed to a red colour: experiments therefore may be tried, by macerating a quantity of them with lime-water, to discover whether they might not produce a tincture proper for giving such a dye to linens, or other substances?

There are several other esculent fruits; but I shall, for brevity sake, range them hereafter in a general list, with some of the preceding, and mention their particular or remarkable qualities by way of note.

169. VANGLO, WONGALA, or OIL-PLANT—*Sesamum Orientale*.

Two species of this plant are cultivated in this island. They are said to have been first introduced by the Jews. The seeds are frequently used in broths. They are in great esteem among the Oriental nations, who look upon them as a hearty wholesome article of diet, and express an oil from them, not unlike or inferior to the oil of almonds. They are cultivated in Carolina with great success; and it has been computed there, that nine pounds of seed will yield upwards of two pounds

nett wt. of oil, which grows more mellow and agreeable with age, and continues without any rancid smell or taste for many years. The warm taste of the seed which is in the oil, when first drawn, wears off in about two years, and it may then be used as salad oil, and for all the purposes of sweet oil.

The Negroes grind the seeds between two stones, parch them, and mix with other ingredients. The Jews use the oil in cakes, instead of butter. In *Aethiopia* and *Egypt* it is used for the same purposes as we do the olive oil. In Greece it is liberally eaten in their cakes and bread; and in China it is equally esteemed.

The vanglo plant requires a rich warm soil; and there are few which more deserve to be extensively cultivated in this island; since it might, with the greatest propriety, be admitted into general domestic use, in the room of that abominable rancid butter imported hither from Europe. Nothing but the grossest prejudice, in favour of old habits, can influence the inhabitants to persevere in the importation of that unwholesome, nauseous stuff, and to swallow it every day with their food, when they may supply themselves with so fine, nourishing, and wholesome an oil, as the sesamum, for an ingredient in their pastry; nor are they less blameable, for continuing to import the olive oil, which is generally rancid before it arrives, and fitter for pernices than salads.

170. JACK-IN-A-BOX.—*Hernandia arborea nuce oleosa*.

This tree is common in the Windward Isles, and is said to be frequent in the woods of Portland parish. The cups that sustain the nuts are large, and the wind, blowing into the cavity, causes a sonorous, whistling noise, very often alarming to travelers. The seeds are very full of oil, and may be applicable probably to a variety of necessary uses.

171. ANCHOVY PEAR, or WEST INDIA MANGO, CALOPHYLLUM—*Palmis affinis malus Persica maxima*, Slo. Cat. 179.

This beautiful tree is frequent in the mountains, as well as in low moist bottoms. The seeds grow very readily. The fruit is about the size of an alligator's egg, and much like it in shape, only a little more acute

acute at one end, and of a brown, rufset colour ; when pickled, it exactly resembles the *East India Mango*, and by some conjectured to be the same, or at least to have the nearest affinity to it. The fruit is ripe in August.

172. RED MANGROVE—*Rhizophera*, Br. 211. *Mangle pirifolia*,
Slo. Cat. 155.

This tree is generally observed on the borders of the sea, in the smaller creeks, and on the banks of the maritime rivers. The roots throw out a multitude of fibres, arched, and fixing themselves in the mud, or ground, intermingled in different directions, which not only serve as props to the parent tree, but form by degrees an extensive range of basket-work, spreading across rivers, or along the shore, and protecting its bank against the surge of the ocean.

The Jamaica oysters adhere closely to these fibres, after they have penetrated below the surface of the water, and cannot be got off, without cutting some of the bark with them, which first gave rise to the fabulous account of their growing upon trees in this part of America.

The wood is very tough and hard, bears water well, and is much used for knees and ribs in long-boats, wherries, and other small-craft ; for which the angular form of the limbs most naturally adapts it.

The bark is most excellent for tanning leather ; it performs this operation more perfectly in six weeks than the oak bark will do in ten ; and the leather tanned with it is the most durable and firm of any for soles.

The decoction of it is a very powerful restringent. Barham mentions his having a son afflicted with the confluent small-pox to such a virulent degree, that the callous part of his feet separated, and came off entirely, leaving them raw, and so tender, that he was unable to set them upon the ground ; upon which the Doctor sent for some of the tan-vat, or liquor of this bark, from a tanner's ; and, adding a little alum, made a strong decoction, in which he bathed his son's feet every day ; and, in about a week's time, rendered them so firm, that he was able to walk about, without any inconvenience.

I have often wondered, considering the powerful effects of these restringent barks upon animal substances, and that by numberless

experiments, their stronger infusions have been found to recover from a state of absolute putridity, that some trials are not made, how far persons in the latter stage of putrid and malignant fevers, when livid *petechiae* make their appearance, when the blood is nearly dissolved, and the disease seems desperate, might not be recoverable, by being plunged into a warm bath made with bark decoctions; the finer virtues of the bark, absorbed into all the pores spread over the surface of the body, must (it is reasonable to imagine) have an immediate effect upon the fibres, in some measure restore their tone and springyness, and by their antiseptic quality re-unite the globules of the blood, and correct their disposition to putrefcency. I am persuaded, from more than one observation, that the Jesuits bark may be administered to infants in this manner when they are incapable of taking it by the mouth, and with the happiest effects. Such experiments are deemed *bold*, because they are out of the common track; but surely what is called a desperate case would always justify the attempt, and especially when it is at least probable that it may succeed.

The quantity of fluid which may be carried into the human body by absorption in a bath is amazing; and upon this principle the ingenious Dr. Hales suggests a means by which persons at sea, when ready to perish with thirst from want of fresh water, may obtain a recruit; which is, by immersing their naked bodies frequently in a tub of sea-water; they will imbibe the water at every pore freed of its salt, which is too large to enter with it, and remains condensed upon the surface of their skin [a]. But in the case of the bark decoction, much of its antiseptic principles are sucked in with the water.

173. POPONAX or ACACEE. *{Mimosa 1. Br. 251.
Acacia Americana, Slo. Cat. p. 152.}*

It is said, a certain person brought the seed of it to Jamaica and planted it, affirming that if he lived to see it grow, he should get an estate by it; but by what means, remains a mystery. It was certainly the worst evil he could have introduced; as it became

[a] When Columbus dispatched an express from this island to the commander at Hispaniola; the Indians who were employed in navigating the canoe, plunged themselves into the sea every now and then, when almost spent with the fatigue of rowing, and parched with heat and thirst; for they had found by experience, that this practice revived their spirits, and enabled them to renew their labour.

propagated, the planters made fences with it in the Southern lowlands and savannahs, but its seeds dispersing about, it soon sprouted spontaneously, and now it over-runs vast tracts of land, and maintains its ground so firmly, that so long as the least particle of the root remains, it never ceases throwing up its thorny plants; whence it is next to impossible to eradicate it entirely from a piece of land in which it has once flourished. The pods are richly impregnated with a sticky astringent gum, easily to be extracted. When they are half ripe, this juice may be made use of for cementing broken China. The trunk, when wounded, emits a transparent gum, like *gum-Arabic*. This gum is produced from the *acacia vera*, or *Ægyptian thorn*, which very much resembles the *Jamaica* plant, and is found in several parts of America. The *Ægyptians* call the true plant, *Charad*, and it is known to botanists by another name, *mimosa Nilotica*, which relates to the place of its growth near the Nile. The husk of the pods of the *Jamaica* tree being soaked all night in water, and a little allum added, may be boiled to a due thickness, and makes a good *black ink*, which never fades nor turns yellow like the copperas ink. Dr. Barham, having carried some of the pods with him to England in 1717, gave them to a dyer, who tried them, and reported that they exceeded galls for dyeing linen, and would be far preferable if they could be procured at a cheap rate. They are liable to be destroyed by a worm, but they might probably be preserved by steeping a little while in lime-water, by fumigation with brimstone just before they are packed, or by putting a small bag or box of camphor into the package.

The roots, when bruised, yield a very offensive smell; and a decoction made from them is said to be mortally poisonous.

But since this plant is now grown so common and even troublesome, might it not be worth while to try if some benefit could be made of it in trade? The person who first gave it introduction probably mistook it for the true *acacia*, which yields the medicinal gum and *succus* of the shops; experiments are required to determine, whether the gum obtainable from the trunk of these trees is not of similar use and efficacy in medicine? and whether the gummy juice of the pods may not be extracted, and prepared in a proper form, for a remittance to Europe? Thirdly, whether they cannot

be brought into demand and consumption among the dyers, as they yield so fine and strong a black tint, which is much wanted for linens.

It is evident from the affinity of these plants, that the Egyptian might, if it was introduced into this island, be propagated with equal facility.

174. SILK-GRASS. *Aloe Species?* *Aloe Yucca foliis, Slo. Cat.* 118.

This I take to be the aloe "with leaves embracing the stalks, " which are reflexed and indented at their edges. The flowers "growing cylindrical and stalk shrubby." "*Aloe Africana, cau-*" "*lscens, foliis glaucis caulem amplectantibus.*" The "*African sword-*" "*aloe.*" The flowers growing in a pyrimidal spike, tubulous, and of a bright-red colour.

The leaf is not so thick nor juicy as the *semper-vive*, but much longer; some extending five or six feet, and narrow: but not so narrow as the pinguin leaf. The edges of the leaf are set with small prickles, and it rises tapering from the base to the point which is sharp.

The chief use of this plant is for making a kind of vegetable silk, which is manufactured by the Indians into hammocks, ropes, fishing-nets, and many other conveniences.

For this purpose they lay the blade or leaf upon a flat piece of wood, and, holding it fast at one end, scrape off the outward green substance with a wooden knife, till the silk or fibres appear in straight threads, extending the whole length. After both sides are scraped, it is thrown into clean water, cleansed from the remaining skin and pulp, and, being dried in the sun, is then fit for use. There is no doubt but with a little improvement it might be made capable of being worked up into very fine stuffs and merchandize. Some of these plants, I have been informed, are growing at *Wreck-bay* near the *Healthshire* hills. They might easily be procured, either from Africa, or some of the greenhouses near London.

175. JALAP, or FOUR o'CLOCK FLOWER.—*Mirabilis.*

This plant is cultivated here chiefly for the beauty of its flowers, which generally open with the cooler hours; and thence it has obtained its name.

The

The root, sliced and preserved, opens the body. It has sometimes been dried, powdered, and administered for jalap; it purges moderately, but requires to be given in too large a quantity. The root scarcely differs from that of the true jalap in appearance; one pound weight of it yields about half an ounce of resin; but the same quantity of the true jalap root gives from an ounce and an half to two ounces; and as the purgative quality lies in the resinous part, the difference between the two roots in their operation may be easily accounted for.

The *true jalap* is a convolvulus plant, climbing upon trees, has a milky, knotted, multangular, reddish stalk; with here and there solitary leaves, which are tender, very green, and heart-formed. The flowers monopetalous, with four indentations; the outside of a pale rose-colour, but purple on the inside towards the bottom, and standing in a capsule; after the flowers follow the seeds, about the size of peas a little compressed, and contained in an umbilical *cista*. The outside of the root is rugose, brown, of an oblong form and large. Dr. Houston carried two or three of these plants from the Spanish West-Indies to Jamaica, where he set them in a garden; but they were afterwards rooted up and destroyed by hogs.

They are easily procureable from the Spanish Main, and might be propagated in this island, by a small degree of care and attention given to such as may be introduced for trial.

The *Asclepias* (4th) of Browne, p. 183. "Scandens villosa
" major, foliis et capsulis majoribus ovatis."

"Climbing *Asclepias* with large pods."

And the 5th of the same, "minor scandens foliis rarissimis, floribus
" paucioribus racemosis racemis sparsis."

"Smaller climbing *Asclepias*," which are both classed by him under the Ipecacuanha tribe, seem to approach nearest.

The former was found in Portland and St. Thomas in the East; the latter is more frequent in the lower swampy lands.

176. BARBADOES PRIDE, or FLOWER FENCE.—*Poinciana*.

This shrub frequently rises to the height of six or seven feet, and bears an elegant flower. Sir H. Sloane calls it *seni spuria*, *arborea*, *spinosa*, or *bastard sena*, and it comes very near to the *Alexandrine*

sena;

Jena; for the leaves, when dried and kept for some time, are with difficulty to be distinguished from that of the shops, and possess the same virtues. The flowers make a delicate red syrup of a purgative quality, and the root affords a scarlet dye.

The pod likewise resembles the Alexandrine. This plant is fullest of flowers in the months of November and December, and the seed ripens in January.

177. BASTARD SAFFRON.—*Carthamus*.

This plant was introduced by the Jews, from the Spanish Main.

The flowers are used by the Spaniards in all their broths, to give them a yellow colour. They are also of use in *dying*.

The seed, or rather kernel within the seed, is what is chiefly applied to medical preparations; it is pounded, and the emulsion taken in water sweetened with honey, or in chicken-broth as a purge.

178. WILD SAGE.—*Salvia Sylvestris, arborescens*.

There are varieties of this shrub, which grows very common in all the lowlands and hills near the coast. The leaves are extremely odoriferous, and seem impregnated with a resinous or balsamic juice. They make an excellent stomachic and febrifuge tea, which promotes diaphoresis, and relieves the head. When bruised and applied by way of poultice, they will cleanse and heal the worst ulcers; they are likewise an admirable vulnerary; and a decoction made with them strengthens weak limbs or joints: the flavour of the tea resembles what is made with the garden sage, except that it is more aromatic.

179. SPIKENARD. $\left\{ \begin{array}{l} Mefosphærum hirsutum, &c. \\ Menthastrum maximum, Slo. Cat. 64. \end{array} \right.$ Br. p. 257.

The leaf resembles that of baum, but is much larger; the stalk large, square and rough, with a globose head, full of small blue flowers. It grows in great abundance in the low gravelly lands about Kingston and Old Harbour, rising to the height of two or three feet. If the tops are squeezed, a clammy or oleaginous substance exudes, of a strong odoriferous scent, like the best oil of spike

spike or nard. It is an annual, and in greatest perfection about Christmas, soon after which none of it is to be seen.

It is a powerful provoker of urine, and dissolvent of the stone. Barham mentions an extraordinary case of a patient of his, who was relieved under the last mentioned disorder, by drinking a sherbet, in which a little spirit of vitriol, and an oily spirit extracted from this plant, were infused; which produced a large evacuation of gravel and stones, "as many (he says) as would fill the hollow of the hand;" the consequence of which was, a perfect exemption from the like complaint ever after.

In urinary obstructions it is a certain specific, and is sometimes administered to drive out the small-pox.

It is one of the most grateful cephalics and alexipharmics of this class, and may be used in most disorders of the nerves and bowels, where such warm medicines are required.

- 180. WILD ROSEMARY.—*Croton Ricino affinis, odorifera, fruticosa.*
- 181. WILD TANSEY.—*Ambrosia erecta, ramosa.*
- 182. WILD WORMWOOD.—*Parthenium subbirsutum, ramosum.*
- 183. JAMAICA RUES.—*Rutæ murariae.*

These several plants and their varieties possess the several virtues and properties in medicinal use, such as baths and fomentations, that are remarked in European plants of similar denomination; except that the rosemary of this island is more aromatic and odorous.

- 184. { WILD OR BASTARD IPECACUANIA. { *Asclepias* 2. Br. p. 183. with a saffron-coloured or white flower.
 Apocynum erectum folio oblongo S. Cat. 89.
- 185. { LESSER BASTARD CLIMBING IPECACUANIA. { *Asclepias* 3. Br. p. 183. with a slender stalk.
 Apocynum fruticosum scandens, S. Cat. 89.

The roots of these two sorts were formerly remitted to Europe for the true ipecacuanha; but they are attended with bad effects on the bowels, administered too liberally. The roots are of a dark brown colour, or rather yellowish cast; the fissures, wrinkles, or corrugations, few; the back smooth.

The roots of the true ipecacuanha are brought from Peru and Brasil. The Peruvian have an ash-coloured or light brown bark; many circular rings, wrinkles, or corrugations, surrounding a string or nerve in the middle, and several fissures or cracks on the outward bark, reaching quite to the nerve. The mealy parts of the bark and nerve are whitish. They are brittle, resinous, and have but little smell.

The Brasilian are of a brownish colour, crooked and rough, having rings like the former, but more rugged. The inside white, and of a bitterish taste.

Sir H. Sloane suspects the first of the spurious plants abovementioned to have bad qualities, but condemns the root and juices of the second or *lesser Asclepias*, as absolutely poisonous.

Although this may serve by way of caution against a careless use of them, yet they probably contain very exalted virtues: as among mankind we often meet with shining qualities and great abilities, joined to great vices; so in the vegetable kingdom, we find the most exalted medicinal principles lodged in plants which are vulgarly thought to be poisonous; small doses well prepared from them, possessing in abstract the most salutary powers in combating with many distempers; on this account some of these plants, when their nature has come to be fully developed and well understood, have ranked amongst the noblest of the *Materia Medica*; because they contain more efficacy within a small compass, than a multifarious composition, made out of many simples esteemed more innocent.

Those plants therefore usually supposed poisonous, or violent in the operation of their juices or parts, are proper subjects for a further critical examination and analysis.

The wild or spurious ipecacuanha, first mentioned, has been medicinally given in this island ever since it became known.

The juice of the plant, made into syrup with sugar, has been observed to kill and bring away worms in a very effectual manner, even when most other vermisfuges have failed; it is given to children from a tea to a table spoonful. The juice and pounded plant are applied to stop the blood in fresh wounds, and it is said to be

a very powerful astringent in such cases. The root dried, and reduced to powder, is frequently used among the Negroes as a vomit. The dose from one to two scruples. To weaken the operation of the root, it may be gently infused in warm water, which poured off is mildly purgative; and the root, being afterwards dried and pulverized, will form a more suitable and lenient cathartic for infirm or delicate habits.

186. BASTARD-CABBAGE. — *Spigelia Faemina*.

This grows to a considerable size. It is reckoned among the best timber-trees in the island; for which purpose, it is frequently cut down in all parts of the country. The bark of the female tree is esteemed a very powerful *anthelmintic*, or destroyer of worms, and administered either in the powder or decoction; but the latter method is preferred, in general, among the white inhabitants, and is thus prepared:

Take four ounces of the bark, bruise it well in a mortar, and put it in a proper vessel, with two quarts of water, which must be reduced by boiling to one quart; then take it off, and let it stand till it is cool. Strain and bottle it for use. It will keep only three or four days. The dose is, two table-spoonfuls to children of about two years old, given on an empty stomach, either three mornings successively, or three alternate mornings, according to the child's strength; and proportionally for younger, or the more advanced, only not exceeding three such spoonfuls for children under seven years of age.

With a due attention to the age and habit of the patient, this medicine may be very safely administered, and will be found to answer the intention most effectually. The female tree is not generally known to the Negroes; but there are several among them who are well acquainted with it, and make a profitable business of gathering and selling the bark, which might be added to the articles of export, and probably find its way into the practice of the faculty in Great-Britain, upon their having trial of its virtues.

187. BITTER-WOOD. — *Xylopicron*.

This tree grows in the mountains to a considerable size, and rising to the height of fifty or sixty feet. The wood, bark, and berries,

have an agreeably bitter taste, not unlike that of the orange-seed, and would probably be found excellent medicines, if they were brought into use. The wild pigeons feed on the berries, and owe all that delicate, slightly-bitterish flavour, so peculiar to them in the season, wholly to this part of their food. Fresh gathered, they are agreeable to the palate, and fit well on the stomach. The bark is also richly impregnated with the same juice as well as the wood; and both yield a very pleasant bitter in the mouth, while fresh.

The facility, with which this quality is communicated, is very surprizing. An handful of the shavings, but just immersed in water, and instantly taken out again, will render it of a very bitter taste. A trough happening to be made of the wood, for watering hogs, it was observed those animals refused to drink at it.

This effect was first discovered in Jamaica by a singular accident. A planter, ignorant of the property of the wood, but imagining it to be very convenient for his purpose, caused a number of hogshead-staves to be made from one, and remitted his sugars to England packed in the casks. Some time afterwards, he received advice from his correspondent, that his sugars were so intolerably bitter, no person would buy them. At first, he thought this piece of intelligence a mere banter; but, upon further confirmation of the fact, he applied himself to discover the cause, and upon diligent enquiry found it out.

Bedsteads and presses, made of this wood, are proof against the invasion of cockroaches, and all other insects; none of whom will venture near it. The *effluvia*, emitted from it, are extremely volatile. Carpenters and others, who are employed to work the wood, perceive a bitterish taste in their mouths and throats. I have been very sensible of the same effect only from sitting a little while in a room that was floored with it. The decoction is said to be of service in colics, and to create appetite. The leaves of this tree resemble those of the English ash. Browne classes it among the *polyandria*.

188. QUASSI. — *Quassia arbor*. *An Citharexylon species?*

The quassi, quashee, or Surinam bitter-wood, was first noticed at Demarara, the Dutch settlement on the South-American con-

tinent; but, after its virtues came to be published, it was likewise discovered to be indigenous to the island of St. Christopher, and some of the other Caribbees. It is described as about the size of an apple-tree, of the *pentandria monogynia* class. The style grows out of the *apex* of two distinct *germina*; the berries are bilocular; the plant itself in every part firm; the root and leaves are of a very bitter taste, without *aroma*; the bark by much the bitterest part; if any thing, the leaves are of a slightly-aromatic taste. It grows in the mountains, and near the sides of rivulets. It is vulgarly called, by the Negroes, the *bitter ash*, and is used by them to promote abortion. But it is likewise proved, since the white inhabitants brought it into use, to be a great specific in dropsical cases. The wood is extremely light, yet firm; of a pale-yellowish cast, without smell, and of a bitter sharp taste. It is more bitter than the Jesuits Bark, and does not seem more disagreeable: it is somewhat less astringent in operation; and preferred to it by Tislot, for the intention of strengthening a weak stomach, recovering the digestion, dissipating flatulencies, and relieving costiveness proceeding from debility; still better in all febrile, gaugrenous, purulent, worm, and convulsive cases.

The following is the method of administering it in practice at the Windward Islands. Boil four ounces of the bark in two quarts of water until reduced to one; rack it off; then add a gill of best Coniac brandy, which will preserve it from turning sour; and bottle for use. A wine-glass is the dose for a grown person, to be taken twice a day for swellings, and dropsical cases. When it is applied in fevers, the wood is pulverized, and the powder given from eighteen to twenty grains, as frequently as the Jesuits Bark is usually exhibited for the like intention; or a decoction is made of the wood, and given in as large a quantity as the patient can bear. It is so inoffensive and mild in its nature, that no extraordinary restrictions are necessary in regard to diet.

It is uncertain as yet, whether or not we have the same tree in this island; but the *citharexylon*, or *old woman's bitter*, seems to have a very near affinity to it in several circumstances. First, as to the class, the old woman's bitter may not with much impropriety be ranked among the *pentandria monogynia*. It has one style,

four perfect *flamina*, and one imperfect. The root, wood, and leaves, are very bitter; but the root has chiefly been administered here in decoction, to promote the *lochia*, and bring away the after-birth, for which it is thought to be exceedingly powerful, and consequently may also occasion abortion, and may have been used for this inhuman purpose by many of the female Negroes. The decoction is of a fine, reddish colour, like new Madeira, or rather Azores wine. It grows in the South-side hills and mountains, and rises to the height of fourteen or fifteen feet; in some places perhaps more. The blossoms of this tree require a more attentive examination, and fuller description of their parts, as well as of the fruit, in order to determine their affinity with a greater degree of precision. There seems, at present, some ground for believing that the qualities of both are very near alike. However this may be, it is certain the Caribbean tree might easily be propagated here; and it is therefore to be wished, that some gentleman of the island would procure and plant seeds, or slips, in order to establish a nursery, from which the inhabitants in general may, in course of a few years, obtain a supply, and cultivate it extensively, as its properties seem incomparably better adapted than most other vegetable remedies, hitherto discovered in the West-Indies, for the cure of dropsies, and putrid, nervous fevers, which may justly be called the endemic maladies of the climate.

189. OLD MAN'S BEARD. — *Renealmia fili-formis, parasitica.*

This slender plant is found upon the trees in many parts of the island, particularly on the ebonies in the lowland savannahs. The fibres, when stripped of the outward membrane, or bark, so much resemble black horse-hair, that the difference can scarcely be perceived without a close inspection. It is used, like horse-hair, by fadlers and coach-makers, to stuff their pannels, cushions, &c. It is sunk in water till the outward membrane rots; then taken up, boiled, and washed until the fibres are perfectly cleared; and, when dry, it is fit for use.

In some parts of North-America it grows far more luxuriant, and furnishes an article of exportation.

190. SOAP-TREE, or SOAP-BERRY. — *Sapindus*.

This tree is common in the South-side hills. It very much resembles the common English ash in size, colour of the bark, and shape of the leaf; but much differing in fruit, which is a black, round berry, contained in a skin appearing like a piece of dried bladder, and very tough. It does not adhere to the berry, but is separated by a small interval. These skins, soaked in water, and rubbed with the hands, form a lather, and scour any substance like soap. They are frequently used instead of it; and a few of them will cleanse more than sixty times their weight of common soap. But they are observed to corrode and hurt linen; and therefore, unless they could be blended with a suitable corrective, they are not so proper for this use as the curatœ juice. It is said, that the ashes of this tree will spoil a great quantity of pot-ash, and make it unfit for use. This, if true, is a very extraordinary circumstance, and difficult to be accounted for. The seeds of the fruit are round, black, and have a fine polish. They are frequently converted into buttons and beads by the Spaniards; and formerly served the like purposes in England. The seed-capsules, leaves, and bark, pounded and steeped in ponds, or the deep holes of rivers, are observed to intoxicate and kill the fish. The medicinal virtues, if the tree or its parts posseſſ any, are not as yet discovered.

191. SURINAM POISON. — *Cytisus minor villosus*.

This plant was introduced from the South-American continent, and is cultivated here for the sake of its qualities. The leaves and branches, being pounded and thrown into a pond, or into a river (where the current is very gentle), are stirred about, and take almost immediate effect. All the fish are presently intoxicated, and rise to the surface, where they float with the belly upwards, as if they were dead, and are easily taken. The larger ones soon recover from their trance; but great part of the smaller fry perish on these occasions. It seems therefore to be a very pernicious mode of fishery; and, indeed, is not much practised, except in the holes of the mountain rivers, which abound with excellent mullets, but are so deep, that the fish cannot well be caught by any other means.

192. DOGWOOD. — *Ichthyomethia*.

This tree is common in the island, particularly the lowlands, where it rises to the height of about thirty feet, or upwards. It is one of the best and most durable timbers in America, and lasts almost equally well in or out of water. It is reckoned not inferior to the English oak, and resembles it much in the shape of the leaf. It flowers about May or June, and throws out all its blossoms before the least appearance of any foliage. The flowers, which grow in bunches, cover all the branches in such a manner, as to make a very beautiful show. The wood is of a lightish-brown colour, coarse, cross-grained, heavy, firm, and resinous; and makes excellent piles for wharfs. This tree may be propagated from slips, or cuttings; and the stakes soon form a good live-fence. The bark of the root, pounded, is used for the same purpose, and with the same effect, as the Surinam poison. It has a very strong, rank smell. The bark of the trunk is very restringent: a decoction made with it stops the immoderate discharge of ulcers, especially when it is combined with the mangrove bark; cures the mange in dogs; and would probably answer well with the other restringent barks for tanning leather.

The mountain dog-wood tree differs but very little. It grows to a more considerable size, in somuch that it may be had, of almost any dimensions, for plantation use. Its timber is of a rather darker complexion, but esteemed not inferior in durability.

193. YELLOW NICKAR. — *Guilandia inermis*, *seminibus flavescensibus*.

194. GREY NICKAR. — *Guilandia spinosa*, *seminibus cinereis*.

The seeds, bark, and roots of both these species, which are extremely common near the coast, are thought to be astringent, and are sometimes administered in gleets. The Indians and Negroes chiefly apply them to this intention; affirming, that they purge off the disorder, and likewise restore and strengthen the parts.

These plants are common also to the Eastern regions; and the seeds are said to be made use of by the women in Egypt and Alexandria, by way of amulet, strung in necklaces, and hung about their children, to guard them from sorcery.

The grey nickar makes a good fence.

195. CANKER-BERRY. — *Solanum eretum, bacciferum, caule tereti aculeatissimo.*

The berries of this plant are bitterish, and esteemed very serviceable in sore throats.

196. BASTARD LIGNUM-VITÆ. — *Polygala.* 3. Browne, p. 287.

There are several species of the *polygala*; but I take this, which was examined by Mr. Robinson, to be the bastard *lignum-vitæ*, found in the Red Hills, near Spanish Town, whose seeds are impregnated with a fine aromatic oil, endued probably with great medicinal virtues: but it requires a further investigation. If it is what is here supposed, the wood resembles the gum-guiac in taste, and is applied to the same purposes.

197. COWITCH, or COWHAGE. — *Strizolobium.*

Sir Hans Sloane tribes this species among the *phaseoli*. Browne mentions three species; the third of which is the *tragia*, with hairy leaves, causing a violent itching when handled. The two first are well known, both in Great-Britain and America, for the like effect produced by the villous coat on their beans or pods. A syrup, prepared with this hairy covering, is very effectual in destroying worms; and a vinous infusion of the pods (twelve in a quart) is affirmed to be a powerful remedy in dropsies. The roots of all the species are an excellent aperient and diuretic; and, boiled in oil, they are said to give relief (externally applied) in gouty inflammations, and the St. Anthony's fire. In worm-cases, the cowitch is sometimes administered with molasses, and the clarified juice of worm-grass.

198. BULL-HOOF, or DUTCHMAN'S LAUDANUM. — *Passiflora, foliis tenuioribus, trinerviis, bicornibus, lunatis, seu anteriori obtuso.*

The syrup and decoction of this plant are used instead of, and found to answer all the purposes for which, syrup of poppies and liquid laudanum are usually administered. The flowers are applied to the same intention, infused in, or pounded and mixed immediately with, wine or spirits; and this composition is esteemed an effectual, easy narcotic.

199. ROSE-WOOD. — *Rodium*.

The rose-wood is found in St. Ann's, and most hilly parts on the South-coast, grows to a considerable size, and is considered as one of the most valuable timber-trees in the island. The wood is white, of a curled grain when young, but grows of a dirty, clouded ash-colour with age, bears a fine polish, and has a most agreeable smell. The younger trees are frequently cut down for fire-wood. They are full of resin, burn very freely, and with a delightful fragrancy. The wood is heavy, and much valued by the cabinet-makers. The berries are of an oblong form, and have much of the taste of balsam-copaiba. I shall beg to refer to what has been said of the amyris; and to recommend these trees to further experiment. The Negroes, in those parts where they abound, may give satisfactory information of the tree, known to them by the name of oil-tree, as well as the season of the year, and manner of extracting the balsam.

200. PRICKLY BRABILA, with smooth, oval leaves. — *Brabila fruticosa, spinosa; foliis ovatis, &c.* Browne, p. 370.

This shrub was found near Port Antonio, in Portland. The fruit has all the flavour, and much of the appearance, of the European plum. It is roundish, succulent, unilocular, of the size of a walnut, but the kernel larger, and covered with a ligneous, shining nut-shell, perfectly smooth; the pulp and skin of the fruit, of a pale-red colour; the leaves and foot-stalks, all of a pale green. The plant rises to the height of nine feet, or upwards.

P L U M - T R E E S.

The plums, commonly so called in this island, are very inferior in goodness to those of Europe: most of them consist only of the seed and skin, with very little pulp or juice between. I shall mention the most noted.

201. SPANISH PLUM. — *Spondias, vel myrobalanus minor, fructu luteo:*

This is one of the most esteemed, and is tolerably pleasant.

202. TOP.

202. TOP-KNOT PLUM. — *Myrobalanus minor, fructu purpureo.*

203. MAIDEN PLUM. — *Comscladia.*

The fruit is eatable, though not inviting. The wood is hard, of a fine grain, and reddish colour, but adapted only to the smaller pieces of workmanship, being only three or four inches diameter. The fruit is about the size of the black-cherry; it turns black when it is ripe, and has a sweetish and not unpleasant taste.

204. DAMSON PLUM. — *Chrysophyllum, fructu minori glabro.*

The fruit is full of milk, and retains it even in its most perfect state; but although it is rough and astringent before the fruit ripens, yet, when it comes to full maturity, it is sweet, gelatinous, with an agreeable clamminess, and is very much esteemed. The juice of the fruit (a little before it is perfectly ripe), being mixed with a small quantity of orange-juice, binds the body in a very extraordinary manner, and doubtless would make a powerful remedy on many occasions. But Browne doubts, whether, if it was inspissated by fire, the native austerity of it might not be greatly diminished.

205. COCCO PLUM. — *Chrysobalanus fruticosus.*

This is very common in Portland and Carpenter's Mountains, and seems to thrive best in a cool, moist soil. It grows to the height of six or seven feet, and bears a fruit not unlike the English plum in size and shape. Of these some are red, some white, and others black, without any essential difference in the shrubs of either sort. The fruit is perfectly insipid, but contains a large nut, inclosing a kernel of very delicious flavour, which makes up abundantly for the insipidity of the pulp. The fruit of the several complexions mentioned have been preserved with sugar, and sent by way of present to Europe; but the red and black kinds are generally preferred.

206. YELLOW, OR JAMAICA PLUM. — *Spondias, foliis pinnatis, ovatis, cortice rubenti.*

207. HOG-PLUM. — *Spondias, foliis paucioribus, nitidis.*

It is not easy to determine, whether these two trees are variations only, or different species, they so nearly resemble each other. They

rise to a very considerable height, whether they are planted in the lowlands or mountains.

They produce a large, yellow fruit, of a rankish smell, but very pleasant, tart taste. Hogs and sheep devour very greedily all that fall ripe upon the ground. Dr. Barham mentions, that, after a violent fever, an inflammation and swelling fell upon both his legs, attended with a pitting, as in the dropsy. A Negroe undertook to cure him, when several of his own applications had failed; and immediately brought him the bark of the first-mentioned species, with some of the leaves; with which he made a bath; they imparted a strong tincture to the hot water, giving it the colour of claret. The doctor kept his legs immersed in it as long as he was able, covering them with a blanket; had them rubbed very well afterwards with warm napkins, and carefully wrapped up; and, by repeating the operation five or six times, he became perfectly recovered, and found his legs restored to their full strength and use.

208. PRICKLY YELLOW WOOD. — *Zanthoxylum, caudice spinosa, ligno subcocco.*

This is common in most parts of the island. It has a leaf like the English ash. The outside bark is brownish, set full of protuberances, about an inch or two inches in length, and as thick as a man's finger, at the extremity of which is a short, sharp prickle. The wood is extremely yellow, and reckoned a good timber.

209. PRICKLY WHITE WOOD. — *Zantoxylon, caudice spinosa, ligno albido.*

This grows like the other, only the inner wood is very white. The flowers are small, and succeeded by bunches of triangular, black seeds, which are hotter than Guiney pepper. The Negroes take them as a remedy for the colic; and a decoction of the root, for gonorrhœas.

210. YELLOW HERCULES. — *Zantoxylon, arbor aculeata, sive Hercules.*

This species Browne confounds with the first-mentioned but it is much thicker set with pointed protuberances, and they are of much

much greater length. The name given to it was founded on the resemblance it was supposed to bear to the club of Hercules. The wood is very yellow. The blossoms have some similitude to those of the *caffia fistula*; after them follows the pod, in shape and bigness like a man's thumb. It is first green, then red, and when ripe turns quite black, containing three or four flat or compressed seeds. The fresh root, finely scraped, and applied by way of a poultice, will cleanse the foulest ulcers, and heal them. The bark is somewhat aromatic. The wood of this, as well as the first-mentioned, are thought by many to be very proper for dying; but no experiment (as I am informed) has as yet been made with them, to determine how far they are valuable in this respect. They are generally considered here as timber-trees, and used as such in buildings.

211. SHRUBBY GOAT-RUE, with round, ash-coloured leaves. — *Galega fruticosa, non spinosa, fraxini folio rotundiore.*

This plant grows chiefly in the lowlands, near the sea. It is supposed, that the leaves would produce a dye not inferior to indigo; and, if this should be demonstrated by experiment, it seems preferable for cultivation in many parts of the lowlands, as it may be raised, with little trouble, in dry and poor soils, where the indigo plant cannot be brought to thrive.

It rises to the height of six or seven feet, the trunk of a dark ash colour, and bears many long, cylindrical pods, full of several oblong, oval seeds, by which it might easily be propagated.

212. FUSTICK. — *Morus, foliis oblongis acutis, ligno citrino.*

This is one of the most valuable trees in the island, whether we consider its use in dying, or the excellence of its timber; the latter quality, indeed, has proved fatal to so many of them, that, unless care is taken to propagate from the seed, it is likely to become very scarce. The fruit, in size, colour, and shape, resembles the white mulberry; it is in perfection in March and April. It is subalimentary, cooling, and makes an excellent gargle for sore mouths and throats. The ashes of the wood yield a salt, which, given to the quantity of ten grains, with mithridate, for three or four

four successive days, is highly recommended by some authors for the gout and rheumatism.

It is painful to reflect on the vast number of these, and other valuable woods in the island, which have been annually cut down, for burning, and other trifling purposes; for which many other trees, of less worth, would have been equally fit. This devastation is so inconsiderately made, and so extensive, that the whole class might, by this time, have been exterminated from Jamaica, if the birds and other animals had not replenished it, in the less frequented parts, with young plants.

Thus much may be said for the settlers; that, upon opening land for a plantation, it is necessary to clear the whole wood away; which is not the case in forming pasture grounds; but when the consideration happens, which trees shall be cut down, and which spared, such a crowd is found, of what are valuable and useful for some or other important purpose, that the choice is difficult. Yet, as most estates are possessed of waste land, what deserves to be recommended is, the planting nurseries of the most useful trees on such lands; which if any number of persons were to do, the several species would soon be propagated by birds, and other means, in most parts of the island, where, at present, they are scarce, or not to be met with; and, at a small expence, a sure foundation laid of great future profit.

213. TURKEY BLOSSOM. — *Tribulus foliis sex jugatis, subæqualibus, flore amplio odorato.*

This plant is common about Kingston, and some other parts; it is a spreading creeper, and grows luxuriantly. It is cultivated in gardens for the sake of its flowers, which have an agreeable odour. The fowls, particularly turkies, are fond of the blossoms, which are thought to heighten the flavour, as well as contribute to the fattening of them.

214. BASTARD CEDAR. — *Theobroma foliis ferratis, fructu minor' scabro.*

This tree is peculiar to the low-lands, where it adorns the pâtures, forms a necessary shade for cattle, and in dry seasons supplies them with food, from its leaves and smaller twigs. On this account, we have made regular plantations of it; and the birds or rats take care to propagate

gate it in all the surrounding hedges. The leaves resemble the English hazel; the fruit seems to be of the mulberry kind; it is green at first, but turns black and hard in its ripe state. A little before it ripens, it has a pleasant, sweet taste, and is frequently eaten by the Negroes, either raw or boiled, as a green in their broths. It is agreeable to cattle, sheep, hogs, and goats, who are said to fatten upon it. The flowers are yellowish, and very odoriferous, having much the fragrancy of the English hawthorn blossom. The wood is light, and so easily wrought, that it is generally used here by coach and chaise-makers, for their side pieces.

215. JOB'S-Tears. — *Coix semenibus ovatis.*

This plant grows wild every where in the woods, and is excellent fodder for cattle. It has all the appearance of a reed, and rises to the height of four feet, or upwards. If it is the same as that of the Archipelago, and which is cultivated also in Spain and Portugal, the grain or seeds may be ground to flour, and made into a coarse, but nourishing, kind of bread; to which use it is applied by poor people in those countries, when a scarcity happens of other grain. Sloane calls it the *larger pannic grass*, classing it with the Negroe Guiney corn, and Guiney wheat. The other species of the coix has angular seeds, but equally applicable to the same uses in œconomy. The seeds are strung in necklaces for infants, in order to help dentition, but of their efficacy for this purpose I can say nothing.

216. BROAD-LEAFED BROOM-WEEED. — *Sida humilior, foliis ovatis serratis alternis.*

This is very common in all parts of the island, and grows in the very poorest soil. It is tough, and, being generally at hand, serves for brooms. It seems to be somewhat of the malvaceous kind, the leaves and tender buds containing a large quantity of mucilage; and lathering with water, like soap. For this quality, it is sometimes used in shaving washes, by such persons as cannot conveniently bear the smell and acrimony of soap. The larger tap-roots serve for tooth-brushes, for cleansing the teeth and gums.

The Negroe women, when their children are scabby, often make a bath with the leaves, to cleanse their skins, and make them thrive. It
has

has unquestionably other medicinal uses, which, in the multiplicity of healing plants, with which the island every where abounds, are disregarded. It bears a yellow flower, which opens every day about an hour before the sun comes to the meridian; so that this, and the *mira-bilis*, or four o'clock flower, are a sort of vegetable sun-dials, corresponding (where the days are so nearly of equal length throughout the year) with tolerable exactness to determine hours or stations of the sun, in the fore and afternoon.

217. ALLIGATOR APPLE, or CORK-WOOD. — *Annona uliginosa aquatica.*

It grows in great abundance about the Southside lagoons, and on the banks of several rivers. The fruit or apples are large, and of a cold watery quality, esteemed highly narcotic, and even poisonous; but of the latter, we have no certain proof: when they are ripe, and drop into the water, the alligators watch their falling, and at the proper season of the year, are said to subsist chiefly upon them. They have a sweetish taste, but, perhaps, the crudity and coldness of their juice might make them a sort of poison to the stomach in this climate, where even melons and cucumbers, not duly corrected, will sometimes convulse it. The wood of this tree is so extremely light, that it is commonly used by way of cork, to stop jugs, bottles, and casks; and it makes excellent floats for fishing nets.

218. GREAT REED MACE. — *Typha foliis sub-enfi-formibus.*

This plant abounds in the lagoons, swamps, and rivers, on the South side. The leaves dried make good mats, and a convenient thatch, which will last several years.

219. MORASS, or MORASS WEED. — *Ceratophyllum.*

This is very common in all the brackish rivers, and other waters; and is generally used for covering fish, or aquatic plants, such as water-cress, and the like, that are sent some distance inland; for it retains a great deal of moisture, which keeps them fresh and cool for a considerable time. Where it can conveniently be obtained, it is very proper to be laid round the tender seeds of the cacao, for a few days after they are planted, or about the young plants; it might likewise be found a useful

useful wrapper for jars or pots of *fresh butter*, sent to any place remote from that where it is manufactured; as from Pedro's Cockpits to Spanish Town or Kingston.

220. TURTLE GRASS. — *Alga foliis angustis fere linearibus.*

This plant grows in most of the sandy shallow bays round the island, and is the favourite food of the manatee and turtle.

221. LARGER TURTLE GRASS, with FLESHY ROOTS. — *Alga foliis planis angustis, radice alba geniculata.*

Is found in the same places, and serves the same purposes as the foregoing.

222. PURGING SEA BIND-WEEED, or SCAMMONY. — *Convolvulus maritimus, foliis nitidis, subrotundis emarginatis, &c.* Br. p. 153.

223. CHRISTMAS GAMBOL. — *Convolvulus Polianthos glaber undique repens.* Br. p. 153.

The first species grows generally near the sea, and is very common in many parts of the island; it creeps a considerable way, and throws out some short foliated branches from space to space as it runs; the leaves are beautifully veined. The root is a strong purgative, and sometimes successfully used in dropical cases. The whole plant is full of a milky juice.

The second is common about Spanish Town, spreads very thick about all the bushes near it; blooms about Christmas, and bears a great number of white fragrant flowers. All the parts of the plant are smooth.

The milky juice of both these plants, boiled to a consistence, makes a *scammony*, proper for the shops. The best sort is light, greyish, tender, and brittle, of a bitter taste, but slightly pungent, and faint unpleasant smell.

224. BROOM WEEED. — *Coccta foliis minoribus ovatis.*

This plant is extremely common. It grows in dry sandy places, seldom rising above two feet and an half from the root, and is converted by the Negroes into beefsons.

225. MOUNTAIN BROOM. — *Chrysocoma arborea ramosissima ramulis teretibus, &c.* Br. p. 316.

This is found only in the coldest parts of the mountains. It resembles the European broom, and is applicable to the same uses.

226. EBONY. — *Brya arborescens, erecta spinosa:*

There are two sorts, the black and the white; they grow every where in the Southside savannahs. They bear a flower, resembling that of the English broom; seldom rise above 18 feet, and in the largest part of the stem do not exceed 5 inches diameter. It is a fine timber wood, has a smooth even grain, which takes a good polish, and is very proper for bed-posts, and a variety of turnery ware; for these purposes the black is generally preferred, whose heart is the complexion of jet. There is likewise a bastard ebony, called mountain ebony, which is of a dark brown. An oil distilled from their wood is said to cure the tooth-ache, applied with cotton. The smaller twigs of each species are in common use for making brooms, and rods for the correction of delinquent slaves.

227. BASKET WITHE. — *Tournefortia reclinata, diffusa, et hispida, foliis ovatis, &c.* Br. p. 169.

This plant, which seems to have some affinity with the turnsole, grows very luxuriantly, and stretches sometimes many feet from the main root. It is commonly used in the country parts for making dung-baskets.

228. SUPPLE JACK. — *Paulinia farmentosa, &c.* Br. p. 212.

This plant is very common in the woods. It has a slender, ligneous stalk, and generally rises to a considerable height, with the help of the neighbouring bushes. For its toughness and flexibility, it is usually cut into junks, barked and used for riding switches, and the larger pieces for walking-sticks; and many are annually remitted to Great Britain. After being kept some time, they become very brittle, and apt to split, unless rubbed now and then with oil. The juice of the leaves is a great vulnerary; and the fruit, or pea, intoxicates fish.

There is another species in the Leeward, or Western parts of the island. The junks are commonly known there by the name of *cudjoes*; they

they are perfectly straight, smooth, and without knots, on which account they might answer better for a remittance.

229. BARBADOES CEDAR. — *Cedrela foliis majoribus pinnatis, ligno levi odorato.*

This is extremely common among the interior mountainous parts, and grows to a prodigious size, being frequently found of 3 to 5 feet diameter at the base, and proportionably lofty. The timber is full of a resinous substance; it is light, easily worked, and gives a fragrant smell; for which reasons, it has always been in esteem for wainscotting, and a variety of cabinet ware. The shingles made from it are extremely durable, and therefore reckoned the cheapest covering of the kind. It is not so well adapted for casks, especially for those intended to contain spirituous liquors, which readily dissolve and become impregnated with the resin, so as to acquire a strong bitter taste. It is the best wood known for canoes and petiaguas, as well as for wherries, and all other vessels, used for plying round the island, or in these seas, as the worm will not invade it, so long as the resin continues. The gum, which may be easily extracted from the tree, is transparent, dissolves in water, and very proper for the shoemaker's use.

230. BERMUDAS CEDAR. — *Juniperus foliolis inferioribus ternis, &c.*
Br. p. 362.

This is likewise a native of the island and grows in most of the higher parts of the Blue Mountains. It is justly admired for its close, even grain, and agreeable smell, and in common use for cabinet ware, pencils, and other conveniences. The gum, or resin, has an antiputrefactive quality, and may be used to preserve other substances from the erosion of worms and insects.

231. BASTARD MAMMEE, or SANTA MARIA. — *Mali persicæ Mammeæ dictæ, spec. folio longiore arbor maxima, &c.* Sl. Cat. 180.

This is one of the tallest timber trees in the island, many of them exceeding 80 feet. The bark is ash-coloured, and furrowed.

As they rise straight and tapering, they have formerly been used for ships masts, and thought preferable, for their toughness, to the fir or pine. They are likewise used for the sweeps and arms of sugar-mills.

Barham mentions, that a Spaniard presented him once with a green balsam, of a beautiful colour, and pleasant smell, which he said was the finest remedy in the world for fresh wounds, but could not tell from what tree it was obtained. Some time after, a Negroe brought him some balsam, exactly the same in colour and smell, which he got from the bastard mammee, and the doctor found it to be an excellent medicine; for, upon dissolving, and applying it to a fresh cut, it healed the part with two dressings. The Spaniards, when it is just gathered, put it into cases made of the hollow joints of the trumpet tree, and call it the *admirable balsam*; but it is for some extraordinary virtues discovered in it, that they have honoured the tree with a consecration to the Virgin Mary, and christened it after her name.

232. MAMMEE. — *Mammea*.

The two species of this tree are good timbers, and much alike; but their fruit differs. It is large, and round, but compressed, covered with a thick russet coat. The pulp of one species red, of the other white. The latter is the most esteemed, for, when ripe, it is perfectly luscious, and most resembles the apricot in flavour, so much indeed, as scarcely to be distinguished. The pulp of both sorts is firm, before it is perfectly ripe, and would make an exceeding fine sweetmeat or preserve.

It is said, “that they who plant the stone or seed of these trees, never live long enough to eat of their fruit.” The foundation of this notion is, that they are near fifty years in growth from the time of planting, before they begin to bear. The wild hogs feed on the seeds, which are a very fattening diet for them.

233. MOUNTAIN GUAVA. — *Psidium arboreum maximum, foliis ovatis nitidis, ligno fusco*, &c. Br. 239.

This fine timber tree grows to the height of 60 or 70 feet, and proportionably thick. Its wood is of a dark colour, and curled grain, works easily, and takes a fine polish. It makes very beautiful walking-sticks, and is a proper article for exportation to Great Britain, where it would, doubtless, be greatly approved of.

234. BRASILETTO. — *Cesalpina arborea, inermis.*
 Id. Id. *spinosa.*

This grows in great plenty in most of the Southern rocky hills near the coast. It is thought a very excellent timber, though in general of small diameter. The wood is elastic, tough, and durable, takes a fine polish, is of a beautiful deep orange colour inclining to red, full of resin, and yields an excellent tincture by infusion.

Its use among the dyers is well known.

The true *Brazilian* is a large tree, with a reddish and thorny bark; the leaves small, obtuse, of a fine shining green; the flowers a little sweet, of a beautiful red hue; the pods flat and prickly, containing two compressed seeds, like those of the gourd.

There are two species in Jamaica, one of which is equal in redness to the Brazilian, and containing a red gum, or resin, of an astringent taste. The wood tough and strong, and used by the wheelwrights, who say it makes the best spokes for wheels. A decoction of the wood is thought to be stomachic.

A red ink is made with the raspings in the following manner: infuse them in vinegar, or some strong *livitrum*, and with gum arabic, or cashew gum, and a little allum, put into a glazed earthen pot, gently steep them for a few hours.

It is sometimes used to colour tooth-brushes.

235. PIGEON WOOD, or ZEBRA WOOD. — *Arbor foliis oblongo ovaliis spicillis alaribus, &c.* Br. p. 368.

This shrubby tree is generally found in the mountains. It rises to about 18 feet in height, and rarely exceeds 5 inches in the diameter of its trunk. The wood is hard, of a close even grain, bears a good polish, and is beautifully striped and clouded. It is often remitted to Great Britain, and used among the cabinet-makers chiefly for fineering.

It resembles, in the colouring of the wood, what is called the bread-nut in St. Ann's; but the latter is a tree of much larger diameter; both are very proper for cabinet-work, and therefore valuable for export. This is not what is commonly called zebra wood, although it well deserves the name, for the uniformity of its stripes.

The species of zebra wood at present in esteem among the cabinet-makers, is brought to Jamaica from the Mosquito shore; it is of a most lovely

lovely tint, and richly veined; but not in lists like the pigeon wood: the latter much better corresponds with the zebra skin in the disposition of its stripes, and the other seems to have the nearer resemblance in its general colouring and ground. Both of them are exceedingly elegant, and would probably give the best effect by a well-fancied inter-mixture on fineered work.

236. SMOOTH ACACIA, or CASHAW. — *Acacia vel mimosa fruticosa, inermis, diffusa major, flore flavo odoratissimo.*

This tree grows to a large size, and is found in great abundance in the neighbourhood of Passage Fort, and the Bridge River in St. Dorothy. It is luxuriant, and spreading. It is esteemed a good timber wood, and used for building small craft, and wharf piles, on account of its being offensive to the worm, tough, and lasting.

The wood is of a firm grain, beautiful brown colour, very glossy when polished, and though it stinks worse than *assa foetida* when first cut, it acquires, by keeping, a perfume, or agreeable odour, very similar to that of the rose-wood. It seems to be largely impregnated with a resin, which probably is not without some valuable quality. Both the bark and roots of this tree afford a red dye, at present unattended to.

237. MANCHINEEL. — *Hippomane arboreum lactescens.* Browne, 351.

This tree seems peculiar to the lowlands, and is rarely found at any considerable distance from the sea. The wood makes very handsome furniture, resembling in appearance the English oak, or wainscot; but takes a finer polish. The hewers usually make a fire round the root, and burn some depth into the trunk, before they venture to cut it. The fire is suffered to prey upon it till very little remains to be done by the axe. The sawyers and carpenters, who work it up, generally cover their mouths and nostrils with crape, in order to exclude the finer particles from getting down their throats. Upon enquiry among the Negroes, I could not learn that they suffered any inconvenience from drops of the juice, which were accidentally spurted upon their skin whilst they were employed in felling the trunk, or hacking off the limbs: but they informed me, that, if any chanced to fly into their eye, it would give them a severe

vere pain for several hours afterwards, occasioning an inflammation, which was relieveable by applying lime-juice to the part.

The stories, related of the fruit or apple of this tree, are certainly to be classed amongst vulgar errors. The romantic tales of the early voyagers and travelers into America have been copied by different writers; and the credibility of their relations, thus built upon a series of such frail authorities, has at length been received as authentic and indisputable. Most of these historians affirm, that "the apple is lovely to the eye, pleasant to the taste, but mortal in its effects;" and that "certain sailors, having taken refuge from sudden showers of rain under the branches of this tree, were terribly blistered in their skins by the drops which trickled from the leaves."

It is true, that the apple bears some similitude, viewed at a small distance, to the English crab-apple; but the crab-apple was never admired for loveliness of aspect. It seldom exceeds an inch in diameter, is of a yellowish colour when ripe, and has scarcely any pulp at all; the fruit consisting of the outer skin, or rind; a pulp about as thick as a wafer; and then the stone, or seed, which is perfectly hard and inedible. Its taste is bitterish; and, when it is green, acrimonious, like the husk of the cashew-nut; which must necessarily render it so disgusting, that no person could eat it in this state for pleasure.

A gentleman of my acquaintance, who was fond of making experiments, to satisfy himself upon doubtful points, cut the green fruit; and a small quantity of glutinous juice issued out at the wound. He tasted this, and likewise the bark and leaf of the tree; but could perceive only a slight astringency on his tongue. He then cut deeper into the bark of the trunk, and tasted some of the milky juice that oozed out. He observed that it tingled his tongue gently, and rendered his *saliva* thin and fluid. He afterwards tasted the fruit nearly ripe, and, chewing the riper part, found it perfectly insipid. From these facts it appears, that, when green, the juice of the fruit is disagreeable from its acrimony, and, when ripe, for its insipidity.

Browne says, that he has known many persons who have ignorantly ate of the fruit, which they had mistaken for crab-apples; that

that they generally vomited in a short time, and continued to complain of a burning heat in the mouth, throat, and stomach, for several hours after. He adds, that he never had known any one to die by eating this fruit, though he had seen some who had eaten nine or ten of the apples at a time; and that oily emulsions and mixtures give speedy relief to those who are disordered with them. Barham, indeed, mentions the case of a Negroe man, who ate several of them, with a wilful and premeditated design of destroying himself; that he complained of great heat and burning in his stomach, but could not vomit; that his tongue swelled, his eyes were red and staring; and he was incessantly calling for water till he expired. Considering this Negroe's intention to commit self-murder, as well as the symptoms which followed, I think we may conclude, that he chose the green, and not the ripe fruit for the purpose.

The white land-crabs are fond both of the leaves and fruit. But I have known persons taken extremely sick at their stomachs after eating these crabs, and who were not relieved until they had disgorged, by drinking plentifully of warm water and oil. I remember a Negroe who continued ill for three days, from a meal he had made on these crabs, but, without recourse to medicine, was relieved by natural evacuations downwards, and was perfectly well after them.

Sir Hans Sloane gives us an example of a turner, whose eye became extremely inflamed and swelled with some of the juice, which spurted into it as he was felling one of these trees. Sir Hans ordered him to be bled, gave him a purge of *extr. rad.* and ordered him to wet his eye very often in cold water, and apply wet brown-paper continually, to cool the part. With these applications he was cured in three days.

He likewise speaks of a man who ate four of the apples, yet was not much hurt.

It is plain from hence, that the trunk and *unripe* fruit contain an acrid juice, which operates like other materials of the like nature, exciting heat, irritation, and thirst, when swallowed and received into the stomach, producing such a pungency on the throat, and tender, nervous coats exposed to its action, as greatly to disorder the whole

whole frame, and bring on very bad symptoms, and sometimes death; but that the juice, when matured and concocted as we find it in the *ripe* fruit, loses much of this acrimony, and, though still unpleasant in its operation upon the bowels, does not produce mortal effects, unless perhaps in very weak and delicate habits; but, as to these latter, I speak only from conjecture.

That the fruit should sometimes produce violent irritation, and at other times be chewed, and even swallowed, without any disagreeable consequence, can only be accounted for by supposing, that persons of stronger or weaker habits are differently affected by it; and that the juices of the fruit may possibly vary much in the different stages of its advance to maturation, and until the exact time of its being thoroughly ripe, when, by a perfect fermentation and concoction, their acrimony is almost subdued. It is not unlikely also, that the juices of this tree may be more poignant and caustic in the hot months, than during the cooler seasons of the year, because the sap in those months is more redundant and active.

It is well known, that goats, and even sheep (Tertre adds, macaws), feed very greedily upon the fallen fruit, when it is in a state of perfect maturity, and doubtless resolve it into wholesome nourishment.

Instinct, which determines the choice of these animals, points out this as an aliment not baneful (at least to them); for they suffer no injury from it. Barham observes, that, however venomous the crude juices of the tree may be, they deposite this quality so soon as they become concocted; that the milk, which oozes out at the bark, hardens in time, and turns to a fine gum, which he administered inwardly many times, mistaking it for gum *guiacum*, and not knowing that the Negroes, of whom he bought it, had put a cheat upon him, and sold him the one for the other. But, after he discovered the fraud, and perceived no ill effect resulting from it, nor any other than what the *guiacum* itself usually produces, he continued to give it, generally dissolved in rectified spirit of wine, making a tincture which the nicest eye could not distinguish from tincture of *guiac*. He insists, that it possesses all the virtues of the other; and that he had found it, by experience, to be a specific for

dropfy, carrying off all the watery humours by stool and urine, only taking care, after the water was evacuated by the gum, to give a decoction of contrayerva and steel, to strengthen the lymphatic vessels, &c.

The gum of this tree is mostly of a light-reddish, or yellowish cast; the *guiacum*, most commonly of a deep green, when held up to the light. The tincture of the latter gives a milky appearance, when a few drops are let fall into a glass of water. I believe the one has very often been ignorantly substituted for the other; yet, if Barham's veracity is to be relied on, which I think it is, there is not much room for apprehensions from the consequence. The gum is most plentiful upon these trees in the month of February; and it is to be wished its nature could be more accurately examined and put to the test.

Upon the whole of the facts, which I have either known, or here delivered, I find no sufficient ground for the stories related of this tree; though, I readily confess, these fictions may have their use, as cautionary to straggling sailors, and others, against smarting for the rash indulgence of a liquorish appetite upon every occasion; for they are too prompt to eat of any fruit that falls in their way, without knowing or considering the effects it may produce on their health. In regard to the odour of the ripe fruit, it is faint, and far from being inviting.

^{237.} MAHOGANY. — *Cedrela, foliis pinnatis, floribus sparsis, ligno graviori.*

This graceful and valuable tree, which furnishes a constant share towards the annual exports from the island, grew formerly in very great abundance along the coast; but, having been almost exterminated from those parts in process of time, it is at present found chiefly in the woodland, mountainous recesses, where vast quantities of it still remain, particularly in the uncultivated districts of Clarendon, and the leeward parishes.

It thrives in most soils, but varies in its grain and texture. What grows in rocky ground is of small diameter, but proportionably of clofer grain, heavier weight, and more beautifully veined. What is produced in low, rich, and moist lands is larger in dimensions,

more

more light and porous, and of a paler complexion. This constitutes the difference between the Jamaica wood, and that which is collected from the coast of Cuba and the Spanish Main; the former is mostly found on rocky eminencies; the latter is cut in swampy soils, near the sea-coast. The superior value of the Jamaica wood, for beauty of colouring, firmness, and durability, may therefore be easily accounted for; but, as a large quantity of balks and plank is brought from the Spanish American coasts to this island, to be shipped from thence to Great Britain, the dealers are apt to confound all under the name of Jamaica wood, which in some measure hurts the credit of this staple production. The tree grows tall and strait, rising often sixty feet from the spur to the limbs; the foliage is a beautiful deep green; and the appearance, made by the whole tree, so elegant, that none would be more ornamental for an avenue, or to decorate a plantation. It generally bears a great number of *capsulae* in the season. The flowers are of a reddish or saffron colour; and the fruit, of an oval form, about the size of a turkey's egg. It is easily propagated from the seeds, and grows rapidly. Some of them have reached to a monstrous size, exceeding one hundred feet in height, and proportionably bulky. One was cut, a few years since, in St. Elizabeth's, which measured twelve feet in diameter, and cleared to the proprietor above 500*l.* currency. The value of it, either for sale, for use, or beauty, being so great, it is amazing that it is not more cultivated on waste lands, of which every proprietor has some within his range. Those particularly, who have families, might by this means apply the worst part of their tracts to produce a future fortune for their younger children. We may imagine the plenty of it in former times here, when it used to be cut up for beams, joists, plank, and even shingles. But it is now grown scarce, within ten or twelve miles from the sea-coast; and must every year become still scarcer, and consequently dearer, unless nurseries, or plantations, are formed of it in places where the carriage is more convenient for the market.

In felling these trees, the most beautiful part is commonly left behind. The Negroe workmen raise a scaffolding, of four or five

feet elevation above the ground, and hack off the trunk, which they cut up into balks.

The part below, extending to the root, is not only of largest diameter, but of a closer texture than the other parts, most elegantly diversified with shades or clouds, or dotted, like ermine, with black spots; it takes the highest polish, with a singular lustre, so firm as even to reflect objects like a mirror. This part is only to be come at by digging below the spur to the depth of two or three feet, and cutting it through; which is so laborious an operation, that few attempt it, except they are uncommonly curious in their choice of the wood, or to serve a particular order.

Yet I apprehend it might be found to answer the trouble and expence, if sent for a trial to the British market; as it could not fail of being approved of beyond any other wood, or even tortoise-shell, which it most resembles.

It feeds in May.

239. SAND-BOX. — *Hura*.

This tree is cultivated chiefly for ornament, and the fine shade it yields. It loves a deep, rich soil, and thrives best near water. It rises to the height of about thirty-five or forty feet, and expands its branches to such a distance, as sometimes to cast a shade of sixty feet diameter. But, by reason of the quickness of its vegetation, its parts are of so loose a texture, that a loud clap of thunder, or a sudden gust of wind, frequently causes the largest boughs to snap asunder. Nor is its trunk of any use, except for fire-wood.

The fruit is flat and round, disposed regularly into cells, each inclosing a flat seed. When the seeds are taken out, the shell, which is very firm, is converted into a box for holding letter-sand. The seeds, roasted, purge upwards and downwards with great violence: they contain an acrid juice, which scalds the mouth and throat, and are therefore very properly rejected from the *materia medica*. The leaves are often applied with great success to the head in fevers, to mitigate, or remove, the pain and tension in that part.

240. FRENCH OAK. — *Bignonia, foliis ovatis, cordatis, simplicibus,
caule erecto, arborea, &c.*

This beautiful tree is cultivated likewise for ornament by the curious. It thrives luxuriantly in the lowlands, as well as in the mountains, and is generally looked upon as a good timber-tree.

241. JERUSALEM THORN. — *Parkensonia aculeata.*

This is an ornamental, shrubby tree, first introduced here from the Spanish Main, for making inclosures. It seldom grows to any considerable size; but it makes a beautiful appearance with its slender siliques, and is cultivated in many gardens.

242. RINGWORM-BUSH. — *Cassia siliquis quadrialatis, &c.*

This plant is now very common in most parts of the South-side. The flowers and juice of the leaves are compounded into an unguent for destroying ring-worms.

243. YELLOW THISTLE. — *Argemone spinosum.*

This grows in all the sandy savannah soils. The seeds are esteemed an excellent remedy in diarrhoeas and bloody fluxes. They work by stool and vomit. But the faculty deem them rather too drastic. The stem contains a milky, glutinous juice, which turns in the air to a fine bright yellow colour, and, when reduced to consistence, is not distinguishable from gamboge. In very small doses, it is probably of equal virtue given in dropsies, jaundice, and cutaneous eruptions.

Barham relates, that the seeds are a much stronger narcotic than *opium*, and gives the following history of their effects. A runaway Negroe, who had been some time absent from his master, lived by stealing poultry, sheep, and other stock. One night he came to the sheep-fold, which was guarded only by a feeble old man, and demanded a sheep. The old man, not being able to oppose him by force, had recourse to stratagem, gave him good words, and invited him to smoak a pipe; to which the other consenting, he immediately stepped aside to fill the pipe, taking care to mix a quantity of the seeds of this plant among the tobacco; and, before the thief had smoaked it half out, he fell into a most profound nap,

nap, and was easily secured. The same gentleman mentions, that a steer, having suddenly dropped down dead, was opened, and several handfuls of this seed found in his stomach; to which he doubtless owed his death. It appears from hence, that, although dangerous in a large quantity when received into the stomach, yet the seeds might be, on some occasions, safely used after the manner of tobacco, and produce the same effects as *opium*, which some stomachs cannot bear in the smallest dose.

244. BAYBERRY, or WILD CLOVE. — *Caryophyllus*.

This is common to most of the West-India islands, and grows to a considerable size. It fills the woods with the fragrance of its leaves, which nearly resemble those of cinnamon; and the berries agree with the Oriental clove very much both in form and flavour.

245. STINKING ERYNGO, or FIT-WEEDE. — *Eryngium Fætidum*.

All the parts of this plant are reckoned very powerful anti-hystericks, and most used by the Negroes and poorer Whites on all occasions of that nature. It is chiefly administered in decoctions, or infusions.

246. WILD OLIVE. — *Non-descript*.

The tree commonly known by this name is remarkable for its durability in the earth, or under water. A melasfles cistern, made with it, after lying fourteen years, being taken up, was found entirely firm and undecayed. The wood is finely grained; and so hard, as to turn the edge of the workman's tools. I have set it down as a *non-descript*, not knowing to what class it is referable, nor having seen any more of it than the wood. But I suspect it is the olive-mangrove, or bontia, of Browne, p. 263.

247. { SPANISH ELM, or { — *Gerascanthus*. Browne, p. 170.
PRINCE WOOD. { — *Cordia, foliis ovatis, integerrimis*. L. Sp.

This is esteemed one of the best timber-trees in the island. The wood is of a dark-brown colour, and gently striped. It is tough and elastic, and easily worked. The tree rises to a considerable height, but seldom exceeds twenty or thirty inches diameter; es-

pecially in the lowlands, where it is most common. The flowers are white, grow in great numbers at the extremity of the branches, are very odoriferous, and continue upon the tree till the fruit falls off. The coopers sometimes make hoops for sugar hogsheads with the young ones. It is certainly an excellent wood for cabinet-ware. An oil is extracted from it, not inferior to *rodium*, having the same scent, use, and virtues.

248. WATER-OATS, or TARE-GRASS. — *Zizania pannicula effusa*. L. Sp. Pl.

This plant is common in all the lagoons. It is also found in the swampy grounds of North-America; where the Indians eat the grain, instead of rice.

249. WATER ARROW-HEAD, or GREAT AMERICAN ARROW-HEAD. — *Sagittaria, foliis maximis, &c.* Browne, p. 345.

This plant is very common about most of the stagnating waters in the island, and particularly those near the Ferry. It is also, like the *Zizania*, found in North-America, where the Indians dress and eat the roots.

250. CHAW-STICK. — *Rhamnus farmentosus foliis ovatis*.
Browne, p. 172.

The bark of this plant is of a pleasant, bitter taste, and raises a great fermentation in the *saliva*, or any rich liquor with which it is agitated. It gives a flavour to the small diluting drinks in common use here; and is an excellent dentifrice, whitening and preserving the teeth better than most others, and answering the purposes as well of a brush, as a tooth-powder upon this occasion. It is likewise supposed a good antiseptic, from the quantity of fixed air contained in it.

I have now complicated a summary of those trees and plants which, I think, appear in general to be the most useful in respect to commerce, and the accommodation of settlers, not omitting those medicinal properties for which they have been chiefly distinguished. It would be far too great a task for me to attempt a compleat *materia medica*, including all the sanative plants in the island. I must beg

beg to refer the inquisitive reader to the bulky collection published by Sir Hans Sloane, and the supplemental labours of the ingenious Dr. Browne, to whose work I am largely indebted for many of the foregoing remarks and descriptions.

I have observed no regular order in the disposition of *genera* and *species*. An omission of this sort, I apprehend, will be readily excused; as the subsequent index will enable every reader to find the subject whose qualities are described in the catalogue.

The substances next-mentioned may be taken collectively with the preceding; though, for the sake of propriety, I have given them a detached place distinct from the vegetable tribe.

251. MARINE SALT

Is easily manufactured, upon all the salina's in this island, by exfoliation. This article, as I have before-mentioned, was formerly a very considerable part of the annual export, till other commodities of greater profit were undertaken. On some parts of the coasts it is still made, chiefly by coction, for the use of a few particular estates. In a large work, whether by exfoliation in pans, or by boiling (where a considerable number of cauldrons are used), the water may be very conveniently thrown in, by means of a small wind-sail pump. After being boiled to a granulation, it is stowed in baskets, which are suspended in an airy, shaded place, to let the bittern drain off; after which, it is fit for consumption.

252. PETRIFYING WATER.

Many springs in the mountains are of so petrifying a nature, that I have seen very excellent hones, made with pieces of hard wood, properly shaped and planed, then laid to soak in such water for several months, until the stony particles had lodged firmly in the pores; after which, they had all the appearance of real stone, and were made use of accordingly for sharpening razors and pen-knives.

253. NITRE.

Large quantities might probably be obtained from those caves where the bats have deposited their dung, as in the grotto of St. Anne, where there are many dozen cart-loads of this filth. The

nitrous shoots, or efflorescencies, are seen in great abundance about all stone and brick buildings in the island, near the sea, where the mortar, or plaster, has been tempered with brackish water; and they very speedily demolish prints, or other paper, placed in contact with them.

253. MARBLE.

The whitish shell-marble is confounded with the lime-stone in this island; it is most common in all the hills and lower mountains; it has a smooth grain, and takes a good polish. There are found veins of black and white marble in several parts of the country, but none have as yet been worked. The common lime-stone is of various kinds, but the shell-marble above-mentioned makes the best cement; and, when compounded with a sharp, clean sand, and fresh water, acquires in time a solidity equal to stone. The lime, when properly burnt here in standing kilns, is not inferior to any in the world, either for building, or tempering sugar; notwithstanding which, some planters, rather than be at the trouble of manufacturing it properly, import their lime, at a considerably greater expence, from Bristol. Most of the planters, who use the Jamaica lime, burn it in circular, conical piles, ranging the strata of stone and wood alternately from the bottom to the top, which they bring to a point. In the Northside parishes, where the sugar, from richness of land, is often foul and difficult to granulate, and the trumpet trees grow in sufficient abundance, it might answer well to burn their temper-lime intirely with this wood; and, by making use of a standing-kiln, a less quantity of fuel would suffice. The ashes, mingling with the lime, would add greatly to its strength and efficacy in refining and purging the syrup.

It is certain, that our planters here are not so provident as they ought to be in the choice of lime, and in the tempering of their sugars. In the Windward Isles lime is not manufactured, by reason of the scarcity of fuel; they import most of what they use from Bristol. The great error with us in Jamaica consists in not burning our temper-lime in standing-kilns. Some gentlemen, who use kilns of this sort, find their lime not at all inferior in strength to that which comes from Bristol.

These kilns, like reverberating furnaces, confine the heat, and keep it up to such a violent glow, that one half less fuel is necessary than in the conical or French kiln before-mentioned, made in open air, with circular layers of wood and stone, piled one upon another. This form, and their having no inclosure, expose them to a continual dissipation of heat ; - insomuch, that the stones, which are ranged near the exterior parts of their circle, are never thoroughly burnt, and often scarcely at all affected ; they consume a prodigious quantity of wood ; and consequently, so large a portion of discordant vegetable salts is intermixed with the lime, as to render it weak, and less fit for the purpose intended in the boiling-house, where the most caustic lime that can be procured is found to answer best. The conic kilns are well enough contrived, where a large quantity of lime is wanted for carrying on a building ; as they are set up on different spots, where fuel and stone are most abundant. But every capital plantation ought to have a standing-kiln, appropriated solely for making temper-lime, and no other ; what is required for carrying on structures, or making repairs, it would be more adviseable to buy, than to exhaust the materials adjacent to the kiln for these purposes. Or, encouragement might be given to inferior settlers to build standing-kilns, and prepare lime for temper, in a skilful and careful manner, so as to become a sort of fixed marketable commodity, and article of regular traffic, for supplying the sugar estates ; for, if it should be so constituted, and sold to them at a certain reasonable price, it would be found to indemnify these settlers for their pains bestowed upon it ; and cause a very great improvement in the quality of our Jamaica sugar. Lime-stone, in common with all other calcarious substances, contains a large portion of *fixed air* ; the presence of it makes them what is called *mild*, and the deprivation of it, by means of fire, renders them *caustic*[*a*]. This explains the change of mild, calcarious earths into quick lime, which is effected by expelling the fixed air that naturalized them. It is found by experiment, that soft water is a much more powerful dissolvent of quick lime, than hard water, at the same time that it covers and meliorates the harshness of its taste.

What is made with distilled water is by far the most pungent, and yet the least disagreeable ; whereas, what is prepared with raw, pump-water, is extremely harsh and nauseous, without being proportionably

[*a*] Priestly.

impregnated with the acrimony, or strength of the quick lime. Where distilled water cannot conveniently be had, rain water, freed by filtration of its impurities, may, with equal efficacy, be substituted in its room.

Different kinds of quick lime are found to impregnate water with different degrees of strength; but a diversity in the *menstruum* in which it is dissolved, appears also to vary it considerably. In order therefore to procure what is of the fittest quality for the boiling-house, it is full as necessary to be careful in the choice of water, as of the lime-stone. In Jamaica it is usual to throw a quantity of quick lime into privies, that are grown offensive, in order to sweeten them; which purpose it very speedily and most effectually answers, by absorbing probably the mephitic particles. In Madeira it is thrown on the corpses buried in church, to accelerate their dissolution, and prevent noxious effluvia.

254. FREE STONE.

255. AGATS.

I have occasionally spoken of their varieties generally remarked here *.

256. REFINING CLAY.

257. POTTERS CLAY.

258. PIPE CLAY.

The first is used in claying Muscovado sugars, as well as for a better sort of earthen ware, manufactured by the Negroes.

The second is more frequent, and supplies the inhabitants with water jars, and other convenient vessels for domestic use. It is likewise most proper for tiles, and drips.

The third sort is common to many parts, or at least a species of it. In Sixteen-mile-walk, the soil in general is a reddish clay, upon digging into which a small depth are found detached veins of a white clay, resembling that from which tobacco pipes are made; it bears the fire well, and might doubtless answer in manufacture.

259. ABOO EARTH.

This is chiefly found in marley beds, running in veins of various colours, but generally answering to that of surrounding layers: it is

* Vol. II. p. 66.

apparently smooth, unctuous, and somewhat cohesive, of a sweetish taste, and dissolves readily in the mouth. Some Negroes get such a habit of eating it in excess, that it often proves mortal to them, by entering into the circulation, and obstructing the capillary vessels. Dr. Browne says, it has even been found concreted in the glands, and smaller vessels of the lungs, so as to become perceptible to the touch. It breaks the texture of the blood entirely, brings on a wasting of the flesh, a general depravation of all the organs, and a lingering but certain death. Notwithstanding which fatal consequences, there is somewhat so bewitching in this practice, that it has been found exceedingly difficult to wean any from it, who have been addicted to the use of it for any length of time.

In regard to the other fossile, and mineral substances found here, I refer to *Browne's Natural History*, who has classed them in regular order.

260. EUROPEAN and NORTH AMERICAN HERBS, ROOTS, and FRUITS, cultivated in this island, where, from their free vegetation, they may be considered as naturalized productions.

Apple [a].	Burnet.
Asparagus [b].	Burage.
Artichoke.	Carrot.
Baum.	Cabbage [c].
Basil.	Cauliflower [d].
Beans.	Carduus.
Beet.	Clary.
Bugloss.	Celery.

[a] Several varieties of this fruit have been cultivated in the cooler districts, particularly in the Liguanea Mountains, where they seem to thrive best, and bear large and well flavoured fruit, but in no great abundance; the trees shoot too much into wood.

[b] This grows to a moderate size; but not so large as in Europe: nor is it managed properly, to raise it in perfection, for it is never laid deep enough, nor regularly cropped. Sir H. Sloane mentions the wild sort, or *maritimus, eraffore folio*, as indigenous to this island; it is probably the same as what is cultivated at Montpelier, Gibraltar, and Minorca, and might be propagated here in great perfection, as it has been found by experience to thrive only in warm climates.

[c] These grow to greater perfection than in England: I have seen heads of enormous size and weight produced in soil just cleared from the native wood, on the North-side, possessing an extraordinary sweetness, and remarkably firm and compact.

[d] These do not attain to any considerable bulk. They are sometimes brought to Kingston market, from the Liguanea Mountains.

Cress.

Crefs.	Melons.
Cucumbers.	Mulberry Carolina [<i>f</i>].
Eschalot.	Mulberry Virginia [<i>f</i>].
Endive.	Onion.
Fennel.	Parfnip.
Fig [<i>e</i>].	Parsley.
Ground Ivy.	Penny-royal.
Garlic.	Purflane.
Grape vines.	Peas.
Hyslop.	Potatoe,
Horse-radish.	Peach [<i>g</i>].
Hasel.	Quince [<i>b</i>].
Lavender.	Radishes.
Lettuces.	Rue.
Leek.	Rosemary.
Liquorice.	Roses.
Marigolds.	Sage.
Marsh-mallow.	Saffron.
Marjoram.	Savory.
Mints.	Scurvey-grafs.
Mustard.	Strawberry [<i>i</i>].

Sun-

[*e*] This thrives very luxuriantly in the low-lands, bears well, and produces so delicious a fruit, that it is probably not excelled in those countries where it is indigenous. It is advised to propagate it by layers; the tree should hardly ever be pruned, or but as little as possible; but, if it grows too luxuriant, the ground should be dug up on one side of it, and about two or three feet from the bottom of the trunk, all the roots should be cut away (big and little), and the hole filled up with rubbish, of a dry barren kind; which, if the like superfluous growth should continue, may be tried on the other side, the following year. But if the tree does not bear thick, or the fruit be observed not to come to perfection upon it, the top stems should be cut off, so soon as they and the fruit begin to appear in the spring. *Brown.*

[*f*] These thrive well here, but do not bear fruit when planted in the low-lands. The berries of the first sort are longer than the European, and of a whitish colour; those of the second are red, but smaller, though perfectly well flavoured.

[*g*] These seldom fructify, nor does the fruit attain to any tolerable size; but it has all the fine flavour peculiar to it; I saw some in a gentleman's garden, in the Vale of Luidas. They might possibly answer better in some part of the Liguanee Mountains.

[*b*] These thrive well in the mountains, and bear in as great perfection as in most parts of England.

[*i*] These grow in as great perfection here as in England, but chiefly in the mountains: however, they are apt to spend themselves in runners or suckers, trailing over a large tract of ground,

if

Sun-flower [k].	Trefoil.
Succory.	Turnip.
Tansey.	Walnut.
Thyme.	Worm-wood.

Catalogue of Jamaica productions in use for POT-HERBS or GREENS,
and of esculent Farinaceous, ROOTS, FRUITS, GRAIN, BER-
RIES, LEGUMINA, DISSERT FRUITS, SPICERY, FLESH, FISH,
&c.

That strangers to this island, who intend to visit it, may have the satisfaction of knowing that they are not bound to a land of famine, I think, it may not be unacceptable to lay before them a *bill of fare*, which may likewise have its use with new fettlers, who by this means may soon learn to supply themselves, from the great garden of nature, with a variety of wholesome and palatable viands.

261. POT-HERBS and GREENS.

Papaw-fruit.	Squash.
Bastard cedar-fruit.	Tomato fruit.
Mountain cabbage.	Ochro.
Wild cucumber.	Choco.
Cotton-tree leaf.	White-coco-tops.
Trumpet-tree leaf.	Tyre.
Bread-nut fruit.	Indian cale.
Branched calalue.	Gourd or pumpkin.
Brownjolly berry.	Amyris, or
Calalues.	Sweet-wood,
Caffada leaves.	Wild sage,
Cucumbers.	West India tea } leaf for teas.

If care be not taken to keep them constantly trimmed; when they are suffered to run wild, they blossom, but never bear well. They are in season here about the latter end of June. Kalm say, that in 1749, an Englishman from Jamaica informed him, there was none of this fruit in the island; but he was certainly misinformed, for they were very plentiful here so long since as the year 1716, perhaps earlier. An old gentlewoman assured me, that when the Duke of Portland was Governor (about the year 1722), they were in such abundance, that his table was constantly well supplied in the season. And I have ate large quantities of them in the months of June and July, brought from the Liguanea Mountains; I have likewise seen them very flourishing in gardens in the low-lands.

[] A very useful oil may be extracted from the seeds of this plant.

262. FARINACEOUS FRUITS, GRAIN, and LEGUMINA.

Plantain.	Lima.
Banana.	Calavances.
Great corn, or Maize.	Kidney bean.
Guiney corn.	Sugar bean.
Guiney wheat.	Pigeon peas.
Black-eyed pea.	Marrowfats.
Cuckold's increase.	Broad bean.
Rice.	Water oats.
Bonaviste.	

263. Roots.

Sweet potatoe.	Negroe yam.
Bastard Irish potatoe.	White yam.
White coco.	Choco root.
Purple coco.	Indian arrow root.
Eddoes.	Pindals.
Cassada.	Water arrow head.
Sweet cassada.	

264. DISSERT FRUITS.

Apple of Europe,	Forbidden Fruit,
Avocado Pear, 2 varieties,	Granadilla,
Biche, or Bissif [¹],	Genip, 2 varieties,
Banana ripe,	Grape of the Sea Side,
Brabila,	Grapes, varieties,
Cherries, Barbadoes,	Gooseberry of the Spanish Main,
Citrons,	Lemon of St. Helena,
Cashew, 4 varieties,	Lemon common, and 3 other va-
Cocoa-nut,	rieties,
Custard Apple,	Lime, 2 varieties, and
Date,	Lime Bergamot,
Fig,	Mammee, 2 varieties,

[¹] The tree which bears this fruit was introduced from the coast of Guiney, and is not yet common, though extremely valuable. The bark is of a dusky red, and used in some parts of that country for dyeing cloth and cotton. The tree is easily propagated from the seed, in a good, moist soil, and might be procured by any of the captains using the trade.

Mammee Sapote,	Prickly Pear,																
Melons, 5 or 6 varieties,	Penguin,																
Mulberry of Carolina,	Pine Apple, 7 or 8 varieties,																
Mulberry of Virginia,	Plantain ripe,																
Naseberry, 2 varieties,	Rose Apple,																
Orange Sweet, 2 varieties,	Sapodilla,																
Orange Sour, 2 ditto,	Sweet-sop,																
Orange Bergamot,	Sour-sop,																
Pomegranate,	Star Apple, 2 varieties,																
Papaw,	Sorrel, 2 ditto,																
Plumb,	<table border="0"> <tr> <td>Damson,</td> <td>Shaddocks,</td> </tr> <tr> <td>Maiden,</td> <td>{ Olive [m],</td> </tr> <tr> <td>Hog,</td> <td>Almond,</td> </tr> <tr> <td>Spanish,</td> <td>Walnut,</td> </tr> <tr> <td>Topknot,</td> <td>Nuts, Cocoa,</td> </tr> <tr> <td>Leathercoat,</td> <td>Ditto, Cashew,</td> </tr> <tr> <td>Cocco,</td> <td>Ditto, Pindals,</td> </tr> <tr> <td>Jamaica,</td> <td>Ditto, Palm.</td> </tr> </table>	Damson,	Shaddocks,	Maiden,	{ Olive [m],	Hog,	Almond,	Spanish,	Walnut,	Topknot,	Nuts, Cocoa,	Leathercoat,	Ditto, Cashew,	Cocco,	Ditto, Pindals,	Jamaica,	Ditto, Palm.
Damson,	Shaddocks,																
Maiden,	{ Olive [m],																
Hog,	Almond,																
Spanish,	Walnut,																
Topknot,	Nuts, Cocoa,																
Leathercoat,	Ditto, Cashew,																
Cocco,	Ditto, Pindals,																
Jamaica,	Ditto, Palm.																

265. PRESERVES.

Pine Apple,	— Mamme,
Ginger,	Cocco Plumb,
Oranges,	Leather-coat ditto,
Lemons,	Cashew Apple,
Limes,	Tamarind,
Citron,	Papaw Blossom,
Guava,	White Sorrel,
Red Sorrel,	Plantain,
Barbadoes Cherry,	Banana.

266. PICKLES.

White-tufted Mushroom [n],	Artichoke,
Wild Cane-top,	Samphire,
Wild Cucumber,	Anchovy Pear,
Papaw Fruit,	Peppers, &c.!

[m] The olive trees introduced here, bear but very indifferently as yet. I have eaten almonds produced here of an excellent flavour, but they are scarce. The walnut is hitherto unprolific.

[n] This species is common after heavy showers, and grows generally on the decayed trunks of the hog-plumb and cotton-trees. It is the only sort that is in use here; and when washed and pounded, is sometimes boiled with beef in soups, to which it gives a very agreeable flavour; it is no less palatable when pickled.

267. SPICERY and PEPPERS.

Ginger,	Bird,
Pimento,	Olive,
Wild Cinnamon,	Hen,
Wild Clove, or Bay-berry,	Barbary,
{ Jamaica Black Pepper,	Finger,
Indian Pepper,	Cherry,
{ Bell,	Ram's-horn,
Goat,	Coral, &c.
Bonnet,	American Nutmeg.

268. PERFUMES.

Musk Wood,	Rose Wood,
Musk Okro,	Prince Wood.
Vanilla,	

269. VEGETABLE SOAPS.

Coratoe,	Broad-leaved Broom-weed,
Soap-tree,	Lignum Vitæ Leaves.

270. GUMS and RESINS.

Guaiacum,	Candle Wood,
Hog-tree,	Balsam-tree,
Cashew,	Manchineel,
Gum-tree,	Acacee,
Locust-tree, or <i>Gum Animé</i> ,	Palmeto Royal,
Sweet Wood,	Bastard Mam mee.
Birch,	

271. DYES and PIGMENTS.

Indigo,	Scarlet Seed,
Anotto,	Prickly Pear,
Logwood,	Morinda Root, or Yaw-weed,
Brasiletto,	Prickly Yellow Wood,
Nicaragua,	Shrubby Goat Rue,
Fustic,	Lignum Vitæ Leaves, for refresh-
Indigo Berry,	ing faded colours,

Cashew-tree, Juice inspissated,	Bastard Lignum Vitæ,
Mountain, or Surinam Calalue,	Yellow Wood,
Vine Sorrel,	Yellow Hercules,
Avocado Pear-stone,	Cashaw, Bark and Root,
Acacee,	Bify Bark,
Flower Fence,	Shrubby Goat Rue.
Bastard Saffron,	

272. OILS.

Cotton Seed,	Cacao-nut,
Oil-nut, or <i>Palma Christi</i> ,	Pimento,
Macaw-tree,	Vanilla,
Palm-nut,	Tobacco,
Cocoa-nut,	Locust-tree,
Vanglo, or Sesamum,	Cerasée,
Oil-tree, or Sapium of St. Thomas in the East,	Ebony,
Antidote Cocoon,	Spanish Elm, or Prince Wood,
Pindals,	Cashew,
Sunflower Seeds,	Gum-tree,
Prickly Yellow Wood Seed,	Alligator Wood,
Jack-in-a-box ditto,	Bastard Lignum Vitæ.

273. SUBSTANCES for CLOATHING.

Cotton Wool,	Laghetto ditto,
Down-tree-down,	Bon-ace ditto,
Coratoe Leaf,	Date-tree,
Penguin ditto,	Mountain Cabbage,
Silk-grafs,	Red Sorrel Bush,
Cocoa-husk,	Hides, } varieties.
Mahoe-bark,	Skins, }

274. For Manufacturing PAPER.

Mahoe-bark,	Mountain Cabbage-tree.
Laghetto-bark,	

275. For

275. For Tanning LEATHER.

Mahoe-bark,	White Bully ditto,
Black Olive ditto,	Red Mangrove,
Button-tree ditto,	Dog Wood.

276. For CORDAGE.

Coratoe Leaf,	Laghetto-bark,
Penguin ditto,	Bon-ace ditto,
Silk-grafs,	Trumpet-tree ditto,
Cotton,	Mountain Ebony ditto,
Cocoa-nut Fibres,	Lilac ditto,
Mahoe-bark,	Anotto ditto,
Bur-bark,	Palmeto Leaf,
Prickly-bark,	Mountain Cabbage,
Torch-thistle Fibres,	Fig-tree Bark.

FOR PLANTATION USE.

277. FENCES.

Logwood,	Dog Wood,
Penguin,	Prickly Yellow Wood,
Torch-thistle,	Horse, or Grey Nickar,
Physic-nut,	Jerusalem Thorn,
Orange,	Palmeto stakes,
Lemon,	Ebony ditto,
Lime,	Fern-tree.

278. HOOPS.

Logwood,	Hoop-withe,
Lilac,	Horse-wood, or Hoop-wood,
Fingrigo,	Spanish Elm.

279. MATS.

Palmeto Leaf,	Cabbage-tree Leaf,
Rush,	Plantane Leaf.
Great Reed,	

280. BASKETS.

Wild Cane,
Basket-withe,

Palmeto Leaf,
Rush.

281. CANDLES.

Bees Wax and Tallow.

282. LAMPS.

See OILS.

283. WICK.

Cotton,

Rush.

284. STARCH.

Indian Arrow-root,

Rice.

285. CHAIR-BOTTOMS.

Rush,

Palmeto Leaf.

286. BROOMS.

Broom Weed,
Mountain Broom,
Great Reed,

Ebony Twigs,
Tamarind ditto.

287. STUFFING for Beds, Matrasses, Chair-bottoms, &c.

Old Man's Beard,
Down-tree-down,
Cotton,

Plantain Leaf,
Banana ditto,
Wire Grafts.

288. CROCKERY WARE.

Potter's Clay.

289. DOMESTIC UTENSILS, as Water-jars, Bowls, Cups, Saucers,
Spoons, Ladles, Pots, and Bottles, &c.

Calibash Fruit,
Cocoa-nut,

Gourds.

290. CORKS.

Cork Wood.

291. CATTLE

291. CATTLE YOAKS.

White Cedar,	Calibash,
Birch,	Bastard Cedar.

292. BOWS.

Guava,	Calibash.
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293. MULE CROOKS.

Guava.

294. WHEEL CARRIAGES.

Bodies,—Bastard Cedar, &c.	Spokes,—Brasiletto,
Shafts,—Lance Wood,	Fellies,—Calibash,
Naves,—Dog Wood,	— — Wild Tamarind,
— — Calibash,	— — Fustic.

295. HOGSHEAD STAVES [o].

Santa Maria,	Alligator Wood.
Gum Tree,	

296. HEADING.

Cotton Tree,	Alligator Wood,
Wild Tamarind,	Broad Leaf.
Loblolly,	

297. SUGAR POTS.

Broad Leaf,	Cotton Tree.
Cedar,	

298. MATERIALS for BUILDING.

Lime Stone,	Sand,
Marble,	Brick and Tile Clays,
Free Stone,	Wire Grafts, for plastering,
Stone, varieties,	

299. WATTLES and LATHS.

Wild Cane,	Lilac.
Loblolly,	

[o] Hogshead staves are required by law to be $3\frac{1}{2}$ feet in length, and $\frac{4}{5}$ inches broad. One cooper is reckoned to be capable of hewing 70 *per diem*, good allowance.

300. SHINGLES [p].

Cedar,	Broad Leaf,
Mahogany,	Fiddle Wood,
Mastic,	Bullet-tree, &c.

301. THATCH.

Great Reed Mace,	Cocoa-nut Tree Leaf,
Palmeto Leaf,	Wild Cane,
Thatch-tree,	Sugar Cane,
Macaw,	Sour Gras,

302. TIMBER TREES for BUILDING, &c.

Barbadoes Cedar,	Black Olive, or Bark Tree,
Broad-leaved Cherry,	Bastard Green-heart,
Bastard Bully Tree,	Break Axe [q],
Bastard Lignum Vitæ,	* Bitter Wood,
Braileto,	Broad Leaf,
Bastard Manchineel,	Black-heart Fiddle Wood,
Bastard Iron-wood,	Bastard Cabbage,

[p] They must be 18 inches long, and 5 broad. Supposing the blocks ready hewn, two Negroes usually split 500 per diem. The price 3*l.* to 3*l.* 10*s.* and 4*l.* per mill, according to the quality of the wood.

[q] This is one of the best and largest timbers in the island. It is so extremely hard, that it is found a difficult matter to cut it down, and from this quality it takes its appellation.

The general properties of the Jamaica timbers are these: heaviness, short close grain, hardness, firmness, smoothness, solidity; the wood often resinous, and its fibres short and brittle. Some few are remarkable also for toughness and elasticity.

The hardest timber, and, it on the mountains, the loftiest, is such as grows in a moderately rocky or stony soil, having a great depth, and yielding easy passage to the tap-roots below. The timber of the more arid parts of the country is almost as hard as iron, though many of the trees are of exceedingly small diameter.

In the North side, Eastern, and Western parts, the greater supply of rain occasions a greater redundancy of sap. The trees in those parts are larger and loftier, but their timber, in general, less durable, and of many, less compact, than those of the dry Southern districts.

The grain of several old mahogany, cedar, and other timber trees, near the root, has often been found impregnated with minute calcareous particles, which must have been carried up with the sap into the vessels of the trunk itself. These particles are sometimes so intimately incorporated with the heart of the wood, as to give workmen an extraordinary trouble in working it up, by spoiling the edge of their planes, and other fine tools. If I mistake not, the like remark has been made with respect to grape vines in some countries, in the hearts of which is sometimes discovered a concreted stony substance; and it is probably owing to this facility of absorption, that several wines, particularly the more acid, are so copiously charged with tartar.

* Those which are marked with a * are only proper for inside work.

Cotton Tree,	Nicaragua Bastard,
Dog Wood,	Nafeberry Bully Tree,
Ebony,	Prickly Yellow Wood,
Fustic,	Prickly White Wood,
French Oak,	Rod Wood, 2 sorts,
Green-heart, or Logwood,	* Santa Maria,
Green-heart Fiddle-wood,	Spanish Elm,
Iron Wood, 2 sorts,	Sweet Wood,
Lignum Vitæ,	Silver Wood,
Locust,	Tamarind,
Lance Wood,	Wild ditto,
Mountain Grape,	* White Fiddle-wood,
Mountain Guava,	* White Bully Tree, or Gallimeta,
Mountain Mahoe,	Wild Olive,
Mountain Dogwood,	White Candle-wood, or Rose-
Mammee, 2 sorts,	wood,
Mahogany,	White Cedar, or White Wood,
Maiden Plumb,	* Yellow Sanders,
Milk Wood,	Yellow Hercules,

303. WHARF PILES.

Dogwood,	Brafiletto,
Cashaw,	Lignum Vitæ,
Palmeto,	Cedar,
Olive Mangrove,	Bitter-wood.

304. NAVAL ARCHITECTURE.

Canoes and } Cotton-tree,	Timbers,—Cedar,
Piraguas, } Cedar,	————— Mahoe,
Plank,—Cedar,	————— Cashaw,
Timbers,—Olive Mangrove,	————— Larger Calibash.

305. CABINET WARE.

Mahogany,	Rose-wood, or Candle-wood,
Barbadoes Cedar,	Musk, or Alligator Wood,
Bermudas ditto,	Spanish Elm, or Prince Wood,
	Pigeon

Pigeon Wood,	Calibash,
Bread-nut Zebra Wood, or Rain- bow Wood,	Sea-side Grape,
Brafiletto,	Maiden Plumb,
Fuftic,	Manchineel,
Bitter-wood,	Mountain Guava,
Yellow Sanders,	Lignum Vitæ,
Cashaw,	Ebony.

306. REED FOR POLISHING.

Branched Horse-tail.

307. BIRDS and FOWLS in common Use for Food.

These are birds of passage, and make their appearance every year about the beginning of October, in prodigious flocks. But the wild ducks, teal, and lesser snipe, breed in the island, and are found during the whole year; though not in so great abundance as about the season of the autumnal rains.

These, as well as the preceding, are by the sportsmen esteemed *game*.

{	Ortolan, or Butter Bird[r],
	Snipe smaller,
	Ditto larger grey [s],
	Whistling Duck,
	Spanish Main Duck,
	American Wood-duck, and se- veral varieties,
	Teal [t],
	Plover,
	Wild Goose.
	Ring-tailed Pigeon [u],

{	Mountain Pigeon,
	Bald Pate [w],
	White-winged Dove,
	Pea-dove,
	White-bellied Dove [x],

{	Mountain Witch,
---	-----------------

[r] These are the rice birds of South Carolina. They grow exceedingly fat in Jamaica, in the season, and are esteemed by connoisseurs not inferior to the true ortolan.

[s] These are somewhat larger than the English, and generally very fat.

[t] The duck and teal, on their first arrival, have a fishy taste; but after being some time in the country, they grow exceedingly fat and delicious.

[u] This is esteemed one of the principal dainties by the Epicures of the island; it is often so turgid with fat, as to burst on falling to the ground after it is shot.

[w] In the season they are fat and well-tasted, but afterwards their flesh acquires the bitterness of gall, and is not eatable; this is ascribed to their feeding on the seeds of the red mangrove.

[x] This has much the flavour of the English partridge.

These,

These, as well as the preceding,
are by the sportsmen esteemed *game*.

House-pigeon,
Bantam ditto,
Barbary Dove,
Ground Dove,
Peacock,
Curacoa Bird,
Curacoa Fowl,
Turkey [*a*],
Dunghill Fowls [*b*],
Game Fowls,
Rumpleless Fowls,

{ Mountain Cock,
Guiney Hen, and varieties [*y*],
Partridge of North America,
English Quail,
Clucking Hen [*z*],
Grey crested Galding,
Blue Galding,
Grey Plover,
Bantam Fowls,
Parrot,
Parroquet,
English Goose [*c*],
North American ditto,
China ditto,
Muscovy Duck,
English Duck [*c*],
Red-faced Coote,
Plantane Coote,
Water-hen.

308. QUADRUPEDS.

Horned Cattle, of Spanish breed, Ditto, English tame,
wild and tame, Sheep Spanish [*d*],

[*y*] This well-known bird is thought equal at least to the pheasant; it is very valuable on another account, it lays from 20 to 80, and 100 eggs, and raises a great number of young at a time.

[*z*] This is looked upon as the best wild fowl in the island.

[*a*] Some of these are so large as to weigh in their plumage 25 lb. or upwards.

[*b*] Some capons weigh 5½ lb. without their plumage.

[*c*] They seem to thrive best in the cooler parts of the island.

[*d*] The breed of our sheep requires crossing, otherwise they degenerate; changing an old ram for a young one is absolutely necessary. One ram is sufficient for about fifty ewes. Carried to a cold climate, they acquire longer hair, but no wool. The grass mutton here, at the proper seasons, is remarkably sweet, juicy, and well-tasted, but small; and would be much better meat if kept to a proper age, for it is generally slaughtered too young; nor is any care bestowed on the choice of pasture. The lamb is always delicious. The stall-fed is as grossly fat as the Essex mutton, and the flesh whitish. The lowland grass-fed is generally most approved of: but the best I have seen, is what has been pastured at Pedro's in St. Ann's. It might be worth while to import the *Llamas* or Peruvian sheep, and propagate them here. These animals are equal in height to an ass of between one and two years old; the Indians use them as beasts of burthen, and they will carry any load under an hundred weight; when they are past labour, they are fattened and slaughtered, and their flesh is esteemed sweeter than that of other mutton: they are extremely docile, and easily kept.

Sheep North American,	Indian Coney,
Red Deer [e],	Wild Hog [b],
Fallow Deer,	English Hog [b],
Nanny Goat [f],	Guiney Hog [b],
Rupi Goat,	Guiney Pig,
Bastard Ibex Goat,	Guana [i].
English Rabbit [g],	

309. FRESH-WATER FISH.

Mountain Mullet [k],	Minnow, or Ticky-ticky,
Silver Eel,	Cray-fish,
Mud-fish,	

These frequent both the salt and fresh waters, but are more commonly found in brackish rivers.

Jew-fish [l],
Calipever [m],
Mullet,
Snook [n],
Shrimp.

[e] These were originally imported from the Continent, and are now grown scarce. They rarely grow fat here in their wild state, but their flesh has a good flavour.

[f] The wether goat here is esteemed, when fat, not inferior to English mutton, and strongly resembles it in flavour. Both goat's and sheep's milk is used here in common, and thought very nourishing and restorative. The cows of the lowlands yield little, and their milk is often poor and waterish. The young kids, roasted whole, are justly esteemed a delicious regale.

[g] One buck is reckoned sufficient for ten does. It is computed, that 50 breeders will annually furnish 50 for family use, 50 for sale, and a sufficient number besides to keep up the stock. The silver-haired skins answer best for sale.

[h] The same of our Jamaica *barbecue* and brawn is so well established, that it would answer no purpose to reiterate their praises, except to tantalize the reader. The tame fowls are a very profitable stock to the settler or planter, as they multiply fast, and are kept or fattened with very little trouble. One boar is generally allowed to ten fows.

[i] This animal seems to be somewhat of the lizard kind, but of the larger species. It will feed on cock-roaches, or any other insect, and even small fish. It is easily tamed when young, and entirely inoffensive.

[k] The mountain mullet is not unlike the smelt in shape, but it is at least six times larger, and justly reputed one of the most delicious fish in the universe. When it is in season, the female bears a roe nearly as big as her body.

[l] These are of all sizes, from 3 lb. to 300 lb. wt., and upwards; the smaller-sized, or from 4 lb. to 10 lb. wt., are most approved; the overgrown ones having a disagreeable rankness, not to be subdued by all the arts of cookery.

[m] They shoot their roes in the middle of November. They are in general much larger than the snook, and seem only a larger species of the sea mullet, extremely resembling in form, flesh, and flavour, those of Arundel in Sussex.

[n] One of these measured three feet four inches in length, from the snout to the tail's end, and weighed 23 lb.

310. SEA-FISH.

" I know not (says Sir H. Sloane), neither have I heard of any place where there is a greater plenty of fresh water and sea fishes, than on this island and on its coasts; which is a great providence and contrivance for the support of the inhabitants;"—more especially for those who reside near the sea, who do not enjoy the productions of the earth in such luxuriance as those of the interior parts, and in unseasonable years depend upon the produce of the ocean, which never fails them, for a large part of their subsistence.

I shall enumerate only such as are the most in esteem; *viz.*

Black snapper,	Painted parrot,
Red ditto,	Green parrot,
Yellow ditto,	Welchiman,
Stone bass,	Grooper,
Anchovy or silver fish,	Sun-fish,
Flounder,	Yellow tail,
Soal,	Silver shad,
Hog,	Dark grunt,
Bream,	Drummer,
Angel,	Paracuta [o],
Spanish Mackarel,	Bonetta,
Herring,	King,
Ten pounder,	Cavalla,
Flying,	Old wife,
Gar,	Trunk,
Dolphin,	Cuckold,
Bracket flounder,	Maid,
Ocean king-fish,	Sting ray,
Porghee,	Whip ray,
Blue parrot,	

[o] This fish has been thought unwholesome, when the roof and palate of its mouth are black. This appearance is probably occasioned by their feeding at certain times on some noxious submarine plant.

311. AMPHIBIOUS.

Manatti or sea cow [*p*],
 Hawk's-bill [*q*] }
 Green } turtle,
 Terrapin }
 Hecatee or land turtle [*r*],

These are more properly ter- } [s] Mountain or black crab } with some
 restial, or sub-amphibious. } Mangrove or white crab } varieties.

312. SHELL-FISH.

Mangrove oyster [<i>t</i>],	English bank oyster [<i>u</i>],
Flat or bank oyster [<i>t</i>],	

[*p*] It tastes as well as looks like very white veal, but the skin has the rankness of pork. It is best salted.

[*q*] The shell of the hawk's-bill, and the flesh of the green turtle, are their respective excellencies. The green, of fifty to eighty pounds weight, is in the highest repute; but both are now so commonly known in England, that it would be superfluous to say more of them, except the remarkable circumstance of their being dressed in Jamaica in a plainer manner, and with less sauce or seasoning, than in England.

[*r*] Some of these have been known to live thirty years.

[*s*] In December and January they begin to be in spawn, and are then extremely fat and delicious; they continue in season till May, at which time they begin to cast their eggs, and to lose their richness and flavour; they discharge their eggs into the surf, and then return to the mountains; about July and August, they begin to grow fat again, and prepare for changing their shell; how this operation is performed, seems not to be certainly known; but as soon as the old covering is discharged, they are in the richest state, being clothed only with a tender membranous skin, which gradually hardens afterwards into a perfect shell. During this change, there are stony concretions always formed in the stomach or bag of this creature, which waste and dissolve, as it forms and perfects its new crust.

The white crabs are not so much esteemed, and are chiefly eaten by the Negroes. Till late years the black crabs swarmed so amazingly in some parts of the North side, that the inhabitants used to destroy millions of them every year, in order to extract an oil from them for their lamps; a practice, which every admirer of this exquisite dainty, concurs in pronouncing a *burning shame*.

[*t*] These are much smaller than the European, but extremely delicate, and not at all inferior to the Colechester. They do not only fasten upon the mangrove roots, but any other substance. I have seen a quart bottle taken out of the water entirely covered with them. The flat oyster comes very near the vegetable kingdom; it shoots out several prongs resembling the fibres of a root, by which it is fixed; this latter sort is unwholesome at certain times of the year.

[*u*] These are the descendants of a parcel imported from Europe by a gentleman of Vere many years ago; but they seem to have degenerated. Those of *Panama*, or *Florida*, would probably answer better.

Sea crabs [<i>w</i>],	Wilk,
Lobster,	Conch,
Shrimp,	Muscle,
White cockle,	Soldier or hermit.

313. ANIMALS OF PREY.

- Marine ————— Shark.
 Terrestrial ————— None properly so called.

314. Amphibious ————— Alligator.

The *alligator* is a sluggish, timidous animal, never venturing far beyond the margin of the water, easily discovered when on shore by its musky smell, and as easily avoided, from the great difficulty with which it turns itself to the right or left; in the water it is soon mastered by the Negroes, some of whom are very dextrous, and attack and defeat it in its favourite element.

In the morning and evening, these animals bask in the sunshine upon sand-heaps in retired places, on the banks of rivers, near the sea; for they are not found in the mountain rivers, nor at any considerable distance from the shore. Sometimes they seem to float in a dog's-sleep, keeping their heads just half raised above the surface of the water, with one eye shut, the other open; or hold their jaws extended, to admit the muskeeto's, and when a sufficient number are collected, suddenly enclose and gulp them down, as a child does caraway comfits. The pupil of their eye resembles that of a cat, in form, as it likewise does in respect to its dilatation into a circular figure in the dark. Between the times of their ordinary respiration when on shore, there was observed an interval of one minute, to one and a half. Their movements are extremely slow, the consequence probably of the inert circulation of the blood and other fluids, as we observe in regard to the turtle. They pay no attention to a person gently and gradually approaching them; but a sudden agitation of the body, or a loud noise, disturbs and terrifies them. It is not yet known what their principal food consists of. They feed on the water-apples; but as these are only in season during

[*w*] The crab and lobster are much smaller than the European; the former is very indifferent meat, but the latter agreeable to most palates, and very delicate: the shrimp is excellent. The rest are principally used in pepperpots, and esteemed very relishing and wholesome ingredients.

one part of the year, they must necessarily have recourse at other times to a different aliment. It is certain, that they will prey upon the dead carcases of animals thrown into the water near their haunts. They will also carry off living animals, such as calves and colts, whenever they are able to surprize them: they are likewise said to devour fish, when they fall in their way; it seems therefore that they are endued with a capacity to digest these several kinds of food, and convert them to their subsistence; but although I have seen many of them cut open, I never observed any substances of this sort in their maws. It is probable, from the torpid circulation of their blood, that they can endure hunger for a great length of time; and that they catch their prey by surprize, for otherwise the smallest degree of activity would elude their attempts; fish of every species are too nimble, unless blockaded in holes which they often (especially the Jew-fish and Calipever) form in the river banks, into which the alligators are said to pursue them. Cattle, such as young calves and colts, which frequent these rivers to slake their thirst, are apt to venture too far, till they are entangled in the mud or weeds at the bottom, and have not strength enough to extricate themselves; whilst they are hampered in this manner, they fatigue themselves with violent efforts, till they are either smothered or drowned, and may then become a treat for an alligator; I have been told of one, that seized a very young colt by the leg, as he was standing on the low margin of a river, drew him into the water, and having drowned him by diving, was making towards a convenient spot to regale [x], when he was suddenly met by a canoe manned with two or three Negroes, upon whose shouts he let go his hold and retired under water, leaving his booty to the captors. Upon examining the maws of several, I perceived nothing but pebble-stones, and in some few the shells of alligator's eggs; whence I conclude not only that they are often destitute of food,

[x] It is said by some writers, "that they let their prey lie four or five days under water untouched, for that they cannot eat the least bit till it is half rotten; but that when it is thoroughly putrefied, they devour it with great voracity." It is not probable, that an animal furnished as he is, with such a number of teeth fitted for rending and dividing the toughest substances, and whose appetite is represented to be so keen, could abstain so long from gratifying it; besides, it seems to contradict the assertion of others, who relate, that an alligator, having once tasted the blood of a living animal, becomes insatiable for it ever after.

but that (agreeably to the relations of some writers) the male devours the eggs whenever he can find them. Their time of generation is about the month of May. The female lays a great number of eggs, about February or March; thirty and upwards having been found in one nest, buried in the sand, on the bank of a river near the sea [y]. Hence it is credible, that Providence has designed these eggs as food for many creatures, if not for man; they are far from being disgusting; but, when boiled hard, are as relishing as the eggs of a duck or a goose. We are not, for this reason, and from this instance, to conclude too hastily against the general notion, "that animals of prey breed but few young." In fact, the alligator has many enemies; but few more destructive than mankind, whose antipathy to it arises from its formidable and unpleasing figure, rather than any real mischief it is capable of acting. Its appearance has afforded grounds for supposing its nature to be equally horrible, but this idea is the result of mere credulity and apprehension. Ulloa relates, that the birds called by the Spaniards gallinazos (a larger species of the carrion crow), in South-America, sit perched among the branches of trees which overhang the rivers in that country frequented by the alligators, to watch the laying their eggs in the sand; and as soon as the females have deposited their hoard and are withdrawn, these birds dart down, and feast on as many as they can find. Our Jamaica carrion crows (which, though inferior in size, are of the same *genus*) are probably directed by the like instinct, though it may have escaped observation; for these birds are so acute and diligent in their quest after food, as to justify the conjecture. The Negroes assert, that not only the male but the female alligators devour great numbers of their young after they are hatched: that the male devours the eggs, I have already shewn; nor is it unlikely but the same sharpness of appetite which impels them to eat the eggs, may stimulate them also in a scarcity of other provender to gobble up some of the young fry. It is certain that many other animals, as swine, cats, rabbits, and rats, are equally unnatural in this respect. And what seems to confirm this opinion, is that a large brood of young ones is seldom or ever observed. I once found twelve in a cluster, on the water, amongst

[y] Thirty-six were found in the body of a female; we may therefore venture to suppose that the number is generally between thirty and forty.

the sedge near the bank of a river, and this was reckoned by the Negroes an uncommonly numerous brood; so that, if the supposition be true, scarcely one third of the eggs they lay ever come to maturity, but perish by some means or other. The little ones abovementioned were easily taken up, and while they were held in the hand discovered all the signs of native ferocity; a Negroe having brought me an egg which was near hatching, I broke the shell very carefully, and found the young one coiled up in this narrow compass in a most curious manner; the snout was depressed, and resting upon the breast: the hind feet were drawn up, and the fore crossed just below the snout; the tail extended under one of the fore feet, and turning over the back, the tip rested upon the bend of the snout; I put him into a shallow vessel of water, and teized him for some time with a bit of straw till he grew very angry, and snapped at it, with great fury. It is said, the female is guided by instinct to the nest, at the time when her young should be delivered from their confinement; that she goes to the spot followed by the male, and, tearing up the sand, begins breaking the eggs, but so carefully, that scarce a single one is injured [z], and a whole swarm of little ones are seen crawling about; that she then takes them on her neck and back, in order to remove them into the water; Ulloa, who gives this relation, says, that the gallinazos make use of this opportunity to deprive her of some; that the male, who indeed comes for no other end, devours what he can, till the female has reached the water with the few remaining; and that even the female eats all those which either fall from her back, or do not swim; so that of such a formidable brood, not more than four or five escape. This account has rather an air of the marvellous; but if we believe that these animals prey upon their young, this seems the least improbable part of it, since it is well known, that their brood, in proportion to the number of eggs they lay, is always diminished, which cannot be otherwise reasonably accounted for: if it be asked, why they should leave any undevoured, as it would be impossible for these little ones to escape them? I answer, that the same question may as well be proposed in regard to the sow, the cat, &c. who content themselves with regaling on a few, but generally spare some, and

[z] Other authors relate, with more probability, that she kills many of her young by the clumsiness of her feet, and sharpness of her talons.

doubtless not from any freedom of choice, but subject to the limitation of the same instinct, which urges them to destroy the superfluous part of their progeny.

Nothing, I venture to think, but their ill looks has saved these animals from being a favourite article of food among the Negroes ; but, if this prejudice should happen to wear off, their numbers in Jamaica would be considerably lessened in the course of a few years. When Columbus first came to St. Domingo, he found that their flesh was in high esteem with the Indians. I have no doubt but the flesh of a middle-sized one is as relishing as turtle, which it exactly resembles in appearance, and in taste also, as I have been assured by a gentleman of my acquaintance, who made the experiment, and caused some to be dressed turtle-fashion, which he extolled very highly, and found it fit equally well upon his stomach, though a man of rather delicate habit. But, in order to prepare them for cookery, the musk-bags must be cut out before their bodies are cold ; otherwise these glands will communicate their flavour to every other part. An officer, who was stationed at Pensacola since the war, declared to me, that his men very frequently ate them, and found them relishing and nutritive. They probably took the hint from the Indians in that part of the continent, who are said to have been always fond of this food. It is plain, I think, that writers have confounded the alligator with the crocodile ; and have reported more on the faith of stories they heard from others, than their own critical examination. Barbot, speaking of crocodiles, says their usual food is fish. Le Maire, that they will sometimes eat fish only, and at other times venture upon man ; likewise, that some are *venomous*, and others not ; and that they feed on pismires. Navarette affirms, that sculls, bones, and pebbles, have been found in a crocodile's belly. Bosman, on the other hand, asserts, that the crocodile is an inoffensive animal ; that he never heard, it devoured either man or beast ; though most authors insist, that it will attack both. Norden reports, that he saw several crocodiles on the sandy banks of the Nile, of different sizes, from fifteen to fifty feet in length ; that the greater part of them would not permit themselves to be approached, but darted into the water before any man could get within gun-shot of them ; that the natives,

who bathe themselves every day in the Nile, do not take any precaution against these animals; nor did he hear of any accident happening from them.

Ulloa mentions, that those alligators, which have once tasted flesh, become so fond of it, as never to take up with fish but in cases of necessity; that there are even too many melancholy instances of their devouring the human species, especially children, who have inattentively rambled near their haunts; and that alligators, who have once feasted upon human flesh, are known to be the most dangerous, and become as it were inflamed with an insatiable desire of repeating the same delicious repast. It is uncertain whether what he has here related was meant of the crocodile, or the alligator, as both species pass with the Spaniards under the same denomination of *cayman*: but it seems to have been founded on the accounts which he heard from the inhabitants; for, when speaking of his own knowledge, he says, “whatever may have “been written with regard to the fierceness and rapacity of these “animals, I, and all our company, know, *from experience*, they “avoid a man, and on the approach of any one immediately plunge “into the water.” It is certain the crocodile is found in all the larger rivers of the South-American continent; and it is probable, that they vary, in colour at least, from those of Egypt and Africa, if not in disposition. It is true, there are well-attested instances in Jamaica of the voracity of the alligator, and his making attempts upon the human species; but, whether the rarity of such examples may be attributed to this creature’s being more fierce at certain times of the year than at others, or when no other food is to be procured, or to the care which most persons take to avoid them, is very doubtful. I am apt to think such attempts are owing more to necessity than instinct. It would probably appear, upon a fair state, that, of the two, the alligator is the more inoffensive animal. But the mistake of several writers, who confound them together, is very apparent; for they talk of alligators thirty feet in length; whereas the largest real alligator, known to have been measured, did not exceed twenty, and was justly thought to be of an extraordinary size, as they are rarely more than from twelve to fifteen or sixteen feet. We are not, however, to repute

the alligator an innoxious creature, since we know that they will attack helpless animals, which happen to be unable to get out of their reach; such as little infants, carelessly standing near them, or colts and calves, entangled in the mud and weeds at some frequented watering-place. Though the crocodile has never been observed in any of the rivers in Jamaica, he is found at the Grand Caymanas, the Isle of Pines, some of the Cuba lagoons, and is very commonly met with at the Mosquito shore. How much he differs from the alligator will appear from the following comparison, of a few particulars only; but I must observe, that there are several other distinctions between them unmentioned.

Alligator

Has sixty-eight teeth; two of which, belonging to the under-jaw, are so long, that he could not possibly close his mouth, if it were not for two perforations, or holes, in the integument of the upper-jaw, into which they are received, as into a sheath; and passing through, appear above the upper-jaw when his mouth is shut.

His head is long and sharp.

He is naturally shy and timidous.

He is of a dusky-brownish hue, except the belly, which is whitish, or resembling that of the turtle.

His legs are extremely short.

His tail is elastic, and has a naturally horizontal motion, like a fish's tail, which answers the same purpose of facilitating his course through the water. His

Crocodile.

He is said to have sixty in several rows, and serrated.

His head is thick, flat, shorter, and less pointed.

The American is said to be quite the reverse.

The American is said to be yellow.

His legs are much longer.

When he runs on shore, he carries his tail above the ground, and turns the point of it up like a bow.

movement on shore is very slow and difficult to him, from the shortness of his legs, and the incumbrance of his tail, which he trails heavily after him.

His eyes are placed on the summit of his head, for the convenience of seeing fish and other objects above him, as he more frequently lies at the bottom than on the surface of the water.

He has four musky glands, about the size of a pistachia-nut, two under the throat, and one on each side the *anus*. These are observed in all of them indiscriminately, old or young.

He makes a noise resembling the barking of a dog.

The barking of the alligator may possibly have been assigned him as a decoy to the canine species, of which he is remarkably fond, as if they were his favourite prey. Dogs are astonishingly afraid of this animal, but are secured from falling into his clutches (otherwise than inadvertently) by the strong, musky scent which he diffuses to a very considerable distance round him, whenever he is reposing on shore, and which gives them timely warning. After all, it does not appear that he is so tremendous a monster as the ideas of timorous persons have pictured him; since he is naturally a coward, disqualified for quick pursuit, easily detected, and as easily avoided, except in the water, where there is surely no necessity to venture in his way..

His eyes are placed parallel to the aperture of the jaws..

Hasselquist says, there is a *folliculus*, or small bag, under the shoulders of the old, full-grown crocodiles of the Nile; containing a thick substance, which smells like musk. But Dampier affirms, that the American crocodile has no musky glands.

He is said to utter a sound resembling the crying of an infant in distress. *But Q?*

NOXIOUS ANIMALS, or such as are commonly so reputed.

315. SCORPION.

It is but of a small size in this island; and the sting not so venomous as is represented in the countries of the South-American continent, where it is found of much greater bulk. A scorpion was irritated to sting a young cock on the side of the head several times successively; but no effect was perceived to arise from it, not even to the exciting a swelling. Their venom is mortal to themselves here, as in other parts of the world where they are found; and it is probably more virulent at some seasons of the year than at others.

316. RED-TAILED SPIDER.

It is of a glossy jet-black all over, except the tail, which glows with a vivid red. It is extremely sluggish and averse to motion, even when disturbed. It inhabits chiefly in holes of old walls, or decayed timber. A young, robust Negroe man happening to be stung by one, the venom irritated his nerves so much, as to throw him into convulsions, which were of no long continuance: upon being blooded and chafed, these symptoms left him; and he felt no further bad effect: The pindals-nut, bruised and applied as a poultice to the stung part, is esteemed an antidote to the venom of both these insects; but any other resolutive oil or oily substance applied warm is equally efficacious.

317. TARANTULA.

I have heard of two species of this spider; but I am doubtful whether they were not, in fact, the male and female of the same species. I never had the opportunity of seeing any. Their qualities seem not to be known as yet with any degree of certainty, as they are very rarely to be met with. Browne says, the nip of the larger species is very painful for many hours; that it sometimes causes a fever and deliriums, which are relieveable with a draught of warm punch, to force a sweat; and that the Negroes, who are most subject to such accidents, are recovered in a few hours by using this simple remedy.

318. CENTIPESES.

318. CENTIPEDES, or SCOLOPENDRA.

The centipes of Jamaica is not equal to the size of what are commonly observed at Carthagena. The nip of this reptile is not near so inflammatory as the sting of a wasp; nor will it offend, unless first hurt, as I have experienced. It harbours most commonly in timber; and is believed to have been introduced hither originally among logwood, and other woods imported from the continent. But, if this is true, it has certainly degenerated in bulk, seldom exceeding five inches; whereas, at Carthagena, according to Ulloa, they are from a yard to a yard and a quarter in length.

319. GALLIWASP.

The bite of this animal (which is somewhat of the lizard-make, and about twenty inches in length) was never known to be mortal; but the effects of it have frequently been exasperated by terror, and the ridiculous method of cure. A Negroe, when bit by it, is instantly seized with the most dismal apprehensions, and hastens with all his speed to reach some piece of water, from a full persuasion, that, if the galliwasp gets at it before him, he shall certainly die; but that, if he plunges in first, it will be fatal to the animal. This done, he cuts out the bitten part. It is but very seldom such accidents can happen, as this creature is not only shy and timid, but infrequent. It skulks among rocks in deep woods; and never bites, unless when trod upon, or otherwise hurt. The consequence to the Negroe is, that he is seized with a fever, which lasts a day or two. If, therefore, we consider the violent agitation of mind and body, into which the patient throws himself after the bite, together with the severity of the operation he performs upon the bitten part; we must be of opinion, that it would be very extraordinary, if a fever was not the certain and invariable consequence.

These animals, it is said, have been sometimes found in marshy places; but I question whether they ever take up their constant residence in such places, as they seem to delight mostly in rocky situations. If they enter marshy ground, it is probably such only as lies adjacent to loose rocks, and in order to make an occasional repast on the muskectos frequenting it.

Although

Although they have been vulgarly reputed most venomous creatures, yet there has not been one well-attested account, to prove that they are so in the smallest degree, more than other animals of equal size, such as large rats, ferrets, &c. whose bite is severe, but not malignant.

The first voyagers held the very same opinion of the guana; and it prevailed a long time, till it became a favourite article of food, and, being by that means better known, was found by experience to be a poor, harmless animal. The forbidding appearance of these creatures, when first beheld by strangers, has contributed chiefly to the prepossession against them; nothing being more natural than to combine the idea of evil qualities with that of an ugly form of body. This opinion, being once established and propagated, soon becomes implicitly received, and grows into a vulgar error, which gathers strength from the fear impressed by the general idea, and causes most persons rather to fly from such animals, than seek them out for decisive experiment. Much may likewise be charged to the stupid ignorance and superstition of the Negroes, as well as to the implicit credulity of others, who take every thing they hear upon trust, and passively submit to the imposition, without giving themselves the trouble of examining any further.

320. VIPERS.

There are none yet discovered in this island..

321. { BLACK SNAKE. { YELLOW SNAKE.

The bite of both is perfectly harmless, and free from venom: Their food consists of rats, mice, young pigeons, chickens, eggs, and such like. They seem to be endowed with voracious appetites; for a yellow snake has been known to swallow a whole nest of hen's eggs entire and unbroken. They are frequently turned into corn-houses, to free them from rats; and they do infinite service among the cane-pieces in the same way: for this reason (as I have been informed) the planters, belonging to one of the smaller Windward isles, imported a breed of them from the continent, in order to protect their canes from the depredation of vast numbers of rats, which

which had over-run the country. Some of the African Blacks, after they come to Jamaica, make the yellow snake a favourite part of their food, whenever they can catch it. They extract the fat from it by boiling, and use it instead of butter; but it is said to render them scabby.

I have frequently handled them alive. They seem not prompt to bite, unless first provoked, and then with no more inconvenience than a mouse. They are remarkably domestic, and have often been known to enter dwelling-houses in the country parts, and take up their abode very peaceably for a long time, until every rat has either been devoured, or put to flight. They are also of a docile temper, and may easily be tamed. They are not shy, like several noxious reptiles; nor apt to retire at the sight of a man; a circumstance worth remarking in respect to animals in general, and which often distinguishes the friend from the foe.

321. POISON-SNAKE.

It is so called by the Negroes from fear only, and not from any known venomous qualities. One of this species being killed, a large bean, of about one inch in length, was found in its gullet whole and uncorroded; which seems to prove its food to be of the vegetable kind. This snake measured three feet and one inch in length. The yellow snake is the largest species in this island, some of them measuring fifteen or sixteen feet in length.

322. AMPHISBENA, OR SILVER-SNAKE.

This curious reptile seldom exceeds sixteen inches length. It is believed, by the Negroes, to be venomous, but without the least foundation, for it is as harmless as an earth-worm. It is either very uncommon in the island, or very rarely seen.

323. WASP.

This insect differs but little, in size, form, and colour, from the European; and it is equally irritable, and apt to give annoyance upon the slightest provocation. They build small, waxen nests, or combs, in empty, deserted houses, suspending them from the rafters of the roof. The cells are hexangular, and covered over one end with a varnished membrane, to defend them from the rain.

324. HONEY

324. HONEY BEE OF EUROPE.

These useful insects were first introduced from England, and have multiplied so well, as to spread innumerable colonies over every part of the island, swarms of them being often found in hollow trees in the woods, in holes of rocks, or banks of earth, and other convenient retreats. Several persons here keep apiaries, which supply them abundantly with honey for family-uses, and wax for candles ; and some families burn none other but their own manufacture. The honey is, in general, aromatic, delicious, and, like the Minorcan, always in a fluid state. The honey produced on sugar-plantations is not equal in flavour or quality to what is made in other parts ; for the bees, when they can find a constant plenty of molasses in their neighbourhood, will not ramble in quest of flowers, but make use of the ready-prepared syrup. The wax is commonly bleached here in the following manner. It is melted in boiling water over a fire ; and, as it floats on the surface, it is taken off in very thin cakes by dipping-in a plate. When the whole is taken up in this manner, the cakes are laid in the sun-shine, for two or three days, until the yellow tint is entirely discharged ; after which, it is perfectly white, like virgin-wax, and fit for use.

A commodity, so cheaply produced, should excite the inhabitants to extend the number of their apiaries. A moderate industry would furnish them with sufficient for their own consumption ; and, in time, with a superfluity for export. It is an article annually remitted from the Carolinas to Great-Britain, and might with equal advantage be established in this island.

325. WILD BEE.

This is much smaller than the European, and very frequent in all the South-side woods. It is remarkable for having no sting ; and is probably the same species so common in Guadaloupe. It builds in the hollow boughs of large trees, particularly the locust, and makes its comb, not with wax, but a composition of gum, and minute particles of tree-bark, worked into a brownish paste, or cement ; which acquires, in time, the firm texture of *papier maché*, but thin, and therefore easily broken in the weaker parts. The

cells are pear-shaped, about the size of a bantam's egg, and filled with a most delicious honey, limpid as crystal, extremely odorous, and cordial. These reservoirs hang connected together in clusters, and are so contrived, that each of them has a convenient aperture during the time of work, which is closed, or sealed up, so soon as the measure is full. When the honey is required to be taken out, the cells, or bottles, are to be pierced a little way from the bottom, to avoid draining out the sediment, which is viscid and glutinous. This honey is gently solutive, the quantity of half a pint generally causing two or three evacuations downwards in as many hours, if taken upon an empty stomach; but, swallowed at meals, it has not this effect. It is, doubtless, applicable to very excellent purposes in medicine; and, as well as the other common honey produced in this island, may be kept for many years in bottles, without running into fermentation like that of Europe. The number of these useful, little insects is greatly diminished by birds and other animals, who constantly prey upon them; but they may be removed, hive and all, into the common apiary, with great safety, where they would be secured under some degree of protection.

326. { PEPPER-FLY.
 { SAND-FLY.

These are very troublesome insects, particularly in the neighbourhood of sandy bays, on the South-side coast; but they are not so frequent in the interior parts, nor often rise to the cooler mountains.

The first, if it happens to fall upon the tuncle of the eye, gives a very disagreeable smarting pain, resembling what is caused by pepper.

The second assaults the hands and face; and, though extremely minute, its nip, or sting, is sensibly felt; when the insect that occasioned it can hardly be discerned; though the effect is rather teasing than painful.

327. CIECOE,

Otherwise called Chigoe, or Chigger, viewed through a microscope, exactly resembles a flea, and is a species of the same ge-

nus, but far more troublesome. The Negroes, who come hither from Africa, are seldom free from it; and it seems uncertain, whether it is indigenous to this island, or propagated from importation. It lodges under the skin of the feet, and forms a little, round bag, of the size of pearl-barley, in which its eggs are deposited. All this, however, is not performed without creating an intolerable itching in the part, which gives notice of the attempt to form a lodgement: in which case, it is thought adviseable to extract it, with the bag, by carefully managing the point of a needle, to clear it without breaking the membrane; and the cavity is immediately filled up with tobacco-ashes, which allay the itching, and prevent a sore. Uncleanly persons, or those who seldom wash their feet, are most frequently subject to this annoyance. They may be destroyed, without extracting, by the application of a cataplasm, made with Castile soap and train-oil mixed; sometimes a little aloes is added: a poultice, of pounded castaña-root, answers the like purpose. But it is better to guard against their attacks by cleanliness, and forbearing to walk often in places strewed with quick lime, or in ginger and potatoe grounds; which are their customary haunts.

328. MUSKEETO.

These gnats, of which two or three species are reckoned in this island, surpass all the other insects here in the annoyance they give to the inhabitants of the lowlands. Their usual time of falling forth, to attack mankind, is about sun-set; and, from this time till the morning, they possess the greatest activity. During the former part of the day, they are commonly torpid, and forced, by the violence of the breeze, to keep in their hiding-places. Yet they do not make their assaults without giving notice, with a kind of shrill hum, in the pitch-pipe tone *A*; so that, when a considerable number of them are assembled in a room, they perform a full concert; which affords but a melancholy presage of the approaching onset, and may be called their war-song. When they are ready to begin the attack, they descend gradually with a seeming caution; and, after wheeling in circles for some time, like birds of prey, dart down at once with a sudden swoop upon any naked part of the

body that presents itself most favourably. In those places where they are very numerous, as in the neighbourhood of water, it is necessary to guard against them by day, as well as in the night, especially in calm weather, at which time they are easily disturbed, and put in motion. In such places, the usual guard for the legs is the muskeeto-boot, or a kind of half-trouzer, made of linen, tied above the knee, and reaching to the shoes; but, at night, they are kept off by a skreen of lawn, or gauze, which encloses the bed instead of curtains, and, being tucked in on every side, prevents their entrance. These muskeeto-nets, as they are called, from having been used at first near the coast, and in the lowlands, are now grown into general use; and we observe them in those elevated parts to which these insects seldom, if ever, ascend. But, although few parts of the island are totally free at all times from some, yet their swarms are far less numerous near the coast, than either on the coast of the North or South-American continent. The North-Americans are obliged to wear paper under their stockings, and wrapped round their legs. In the hot months, they are annually visited with prodigious multitudes; whose sting, or rather bite, is far more inflammatory than has been observed in this island, where, the pores being kept in a more uniform state of relaxation, their puncture is made with more ease, and less severity. So soon as one of these insects has perched upon the hand or face, it shoots out its *proboscis*, whose point is so fine, that it enters the pores, but continues penetrating very slowly till it reaches some one of those delicate ramifications of the blood which circulate near the surface: the muskeeto then begins to set its little pump, or tube, at work, first, by means of a well-disposed mechanism, exhausting it of the air contained in it; after which, the blood rises according to the laws of hydrostatics, and continues its ascent in a full tide till this diminutive canibal is perfectly satiated, and its body dilated to such a size, that it is scarcely able to withdraw its weapon and retire. The *proboscis* enlarges, or swells, at the same time; insomuch that, by drawing the skin tight, and so straightening the orifice, I have seen them pinned down like a bear to a stake, and disabled from escaping, notwithstanding all their struggles. If they are suffered to drink their fill without being molested,

lested, they seldom raise any, or but a very slight degree of, inflammation; but, when suddenly disturbed, or brushed away, it is probable they wound or lacerate the part, by hastily extracting their *proboscis*, and so leave a small pimple, attended with an itching, which is soon removed by rubbing on a little lime-juice. The method, commonly practised for dispersing them, is by making smoak in the evening about the time when they assemble. They love dark rooms, and black complexions; which serve to hide them from view: the Negroes of course are exceedingly annoyed with them, except in their huts, where the constant custom of kindling a fire at night prote&t them during their hours of sleep. The fire-flies are natural enemies to the muskeetos, and feed upon them. The Indians, having discovered this, used to attract these flies with lighted torches; and, when they had caught a sufficient number, let them loose in their huts at night, to drive the muskeetos from their hammocks; which office they are said to have performed very effectually. These insects deposite their eggs indifferently in all stagnant fluids. They even hatch in water strongly impregnated with quick-lime. Their young, or tadpoles, in their smallest state, are so extremely minute, as to be scarcely visible to an unassisted eye upon the closest view. The river-waters in general on the South-side may be suspected of containing their eggs, or young; but it is not probable, that they can exist a minute in the human stomach. However, this, among other things, is a reason why it may be proper to strain all such water through cloths before it is drank, in order to depurate it from these, or other animalcules, which may possibly float in it unperceived by the eye. Kalm says, these insects have a great aversion to grease, and will not meddle with a skin that is anointed with it; but such a remedy is nasty as well as unwholesome; though constantly practised by the bucaniers, who used to besmear their hands and faces with hog's-lard; to which they added the burning of tobacco leaves by night in their huts.

330. COCKROACH.

This insect has a variety of names. In North-America it is called *mill-beetle*: the Dutch, settled there, style it *kackerlack*; the Swedes,

Swedes, *brodoetas*, or bread-eater. Linnæus distinguishes it by the name of *blatta Orientalis*; for it is common to both the Indies. There are three species in Jamaica. The first is very scarce, of a green colour, and has been noticed only in the leeward parts of the island. The second, which chiefly resides in vaults and cellars, is of a very dark-brown colour; the belly black, with transverse lines of white; it is longer than the English cock-chafers, torpid, inactive, and loathsome. The third sort, which frequents the apartments of dwelling-houses, is smaller, of a light-chesnut, or reddish hue, with a very compressed body, which enables them to infinuate themselves into bureaus, boxes, and drawers, through very small crevices. The cabinet-ware, made in England for exportation to this island, ought to be very closely paneled, screwed at the back, top, and bottom, and of dry, well-seasoned stuff: otherwise, when the wood comes to shrink, it will afford numerous apertures for the free passage of these insects, who not only do a great deal of damage to cloths of all kinds, but impart to every thing they touch a most offensive smell. They are fond of glutinous, or greasy, substances; but will eat any thing, leather, parchment, linen, woolen, manna, and even *Aethiops* mineral; nothing comes amiss. Nature seems to have given them scarcely any appearance of instinctive choice in selecting wholesome, or rejecting noxious, aliment: for want of this sagacity, they often fall victims to their ravenous appetite; and, indeed, if it were not for this, they would soon swarm in such multitudes, as to become worse plagues than any that infested the land of Egypt; for they are extremely tenacious of life, and, when crushed with the foot, are often seen crawling again, and dragging a trail of bowels after them. A scorpion, a house-spider, and a cock-roach, were put all together for experiment into a well-corked phial, and imprisoned till they died; but the cockroach survived the longest. They lay a great number of eggs, which are of a wedge-like form, and covered with a firm, shining, brown integument: they generally fasten them to some substance; and they are not easily demolished by other insects. So wisely are the scales of being ordered, that all creatures are checked in their redundancy; neither being suffered, on the one hand, to multiply beyond a certain allotted limit, nor,

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on the other, to be wholly annihilated by the casualties to which they are subject. These insects (I do not mean it as a proof of their good services) are remarkably covetous of pomatum and powder, which they nibble away very dextrously, and with them many hands-full of that bushy covering, ycleped a perriwig, scarcely having the manners to leave nine hairs on a side. Oft have the *venerable full-bottom*, the *sage tye*, and *respectable major*, fallen victims to the appetite of these ravenous creatures, and been utterly shorn of all their dignity, learning, and authority, in the short space of one night. Yet, notwithstanding such mischievous pranks, these domestics are not without their use: for they are exceedingly industrious in gleaning up such filth and nastiness, as the slovenly neglect of bad housewives has left in holes and corners undisturbed by the broom: they are, on this account, very necessary in such habitations in hot climates, where uncleanness and sluttishness may generate putrid smells, and corrupted air, to the detriment of health. In houses of this class, they are always found in the greatest abundance, attracted by their favourite food, and proportioning their numbers to the quantity of scavenger's work necessary for them to perform; so that, if I was to address one of these housewives, it should be much in the style of Solomon, " Go to the *cockroach*, thou *slut*; consider her ways, and be *'cleanly.'*" They are not less fond of bugs, and frequently creep at night behind beds, in order to surprize and devour all the stragglers they can meet with. They seem to be full of volatile, urinous, and animal salts; and, I believe, a very strong spirit might be obtained from them, of use in hysterical cases. They are certain foretellers of rain or wind; previous to which, they are seen issuing from their lurking places behind loose panneles, or floors, in a violent hurry, and flying about in the utmost confusion. The larger grey house-spider, which carries its eggs in a white bag beneath its belly, is a natural enemy to the cockroaches, and feeds upon them.

331. WOOD-ANTS.

These are very singular insects. They build their nests, of very large diameter, generally upon some tree, or the rafters of deserted houses.

houses. I have seen some near four feet in height, and eighteen inches thick, in the broadest section. They are pear-shaped, round, biggest in the upper part, and diminishing towards the bottom. They seem composed of particles of wood, and a resinous substance, which hardens in the air, and is indissoluble in water; for no rain can penetrate into them. These insects never work abroad, but carry on their traverses and approaches, to and from their habitation, under vaulted passages, which are covered with a crust, probably composed, in a great measure, of similar materials. As each hive, or nest, contains two sets of differently-formed ants, it is probable that the distinctions are sexual, as their occupations are somewhat different. Their living always secluded from the air has been thought to account for the white colour of their bodies, and tenderness of their skins. One class has a large, round, whitish head; but the head of the other is covered with a shining, dark-brown skin, of a horny substance, and pyri-form, being round where it joins the body, and terminating in a point. Upon breaking one of these causeways, a party immediately run to repair the breach, which they perform very expeditiously in the following manner. The former sort apply their tails to the broken edge, and let fall a small drop of glutinous matter, and, then withdrawing, make way for the others, who work it about with alternate motions of their head, as a mason uses his trowel, to incorporate and make it firmly adhere. Successive labourers continue the work, till the hole is entirely closed up. This operation cannot be well observed without the assistance of a glass, and is equally curious and entertaining.

These insects are not very troublesome, except in places newly-cleared from their native wood, in order to be settled. When they invade houses, their track is conducted with so much art, as frequently to escape observation; and they often exhaust the house-timbers of their substance, destroy old deeds, cloaths, and the like, when no suspicion of their presence has occasioned any search to be made for them. When they attack books, they generally eat through all the leaves, and besmear the edges with their glue, or mortar, which prevents their being afterwards separated without tearing.

The

The usual method of destroying them is by throwing a very small portion of arsenic in at a hole made into their nest, or covert-way, mixed with sugar ; which soon kills the whole society.

They are excellent food for young poultry ; and their nests, burned to ashes, yield a very fine and strong *lixivium*, which might be made use of for many purposes. If the substance of the materials could be dissolved by boiling in water, or maceration, I doubt not but it might be cast in moulds, and adapted to a great variety of ingenious manufactures, as snuff-boxes, toothpick-caſes, toilet-boxes, and the like. It is likewise worth experimenting, whether a cold or hot infusion in spirit of wine would soften it.

332. SUGAR-ANT.

This minute insect is to be found in most houses, and seems to have a peculiar attachment to syrups, preserves, and all sugared dainties. In order to stop their march, it is usual to set the feet of a table (upon which such articles are laid) in little troughs, or pans, of water : but such is their liquorish appetite, that many dozens perish in attempting to cross the water. If such articles are kept in a safe, or suspended shelf, an old wig, or a bottle, is fixed at the bottom of the cord. The entangled hairs of the former perplex their journey so much, that they rarely get to the end of it ; and the glass is too slippery to afford them a passage.

333. BLACK STINGING ANT.

These are most troublesome in some of the country-houses, where they frequently construct their nests under the floors, and endeavour to participate of the good cheer. They feed on flesh, as well as vegetables, and will soon make a skeleton of the carcases of lizards, and other small animals, placed near their haunt. This is the species which gave such annoyance to the Spaniards, at their first settlement at Melilla, as to occasion their removal. Their bite, or sting, is very acute, though but momentarily painful. They are destroyed, like the wood-ant, by arsenic, mixed with sugar, or syrup. Quicksilver is equally fatal to them.

334. Book-WORM.

The insect, which gives birth to this worm, is of the smaller *carabæus* kind, and is fond of depositing its eggs in books newly-

bound. So soon as the little worm, or maggot, is hatched, it begins its depredations on the back-part of the binding, feeding upon the substance, and boring numerous holes. It afterwards proceeds in the same manner with the leaves, till they become a perfect fillagree. After it turns to a beetle, it retains a predilection in favour of the place of its nativity; and new broods succeed so long as any *pabulum* remains. Under the article *Aloes*, I have proposed a method for securing books from the erosion of this creature; and it will not appear unimportant, on reflecting that very costly and valuable libraries have often been entirely destroyed by it in this island.

335. BIRDS, and some other Animals.

It is only my intention to give an account of such as are most remarkable for their good or ill qualities, or singularities, that have not been already enumerated, or fully distinguished, in other publications relative to this island.

336. CARRION-CROW.

This bird, at a small distance, resembles very much a wild turkey, and was mistaken for it by the first navigators into the West-Indies. It is of the vulture species, and extremely useful in this climate, where it contributes not a little to prevent the generation of malignant diseases, arising from the putrefaction of dead animal bodies. On the first setting-in of the morning-breeze, it takes its stand upon some elevated place, as a house, or the uppermost bough of a decayed tree; where it holds its wings expanded for some time, and vibrating, as if to prepare for a cruise; then suddenly springs into the air, and, wheeling as it rises, ascends to an amazing height. It is endued with so keen a scent, that, after gaining a sufficient elevation in the atmosphere, it has been seen to fly directly to carrion, lying at a prodigious distance to the windward from it. Nature has given it an appetite so voracious, and a digestion so quick, that it is always either crammed very full, or it is extremely lank and empty. If a carcase is in the highest state of putrefaction, it perseveres in gormandizing till it is scarcely able to fly, but stands motionless, with its mouth wide-open, gasping for

for breath, and its eyes still riveted with insatiable desire upon the filthy remnants; like those human Epicures, who, after stuffing themselves up to the very top of the gullet with turtle or venison, have lost the power of returning to the charge, yet retain an unabated craving for the scraps and offals still in view. It is a most wonderful mechanism, that its stomach is capable of resolving such rotten substances into wholesome nourishment. Experiments have shewn the antiseptic power of the bark, acting by its astringency on the fibres of putrid flesh, and discharging it of its *faeces* within a certain degree of corruption; but no material is hitherto discovered capable of sweetening, and restoring the cohesion of, parts, where the flesh is absolutely decomposed, and reduced by putrefaction into a kind of loose pulp: yet the carrion-crows often devour it in this state, and consequently secrete in their stomachs some liquor of a peculiar quality, which alters the mass received into them in such a manner, as to extract a nutrimental chyle from it, even when it is superlatively foetid and corrupt.

These birds may justly be styled the living sepulchres of departed beasts, and execute that office without-doors which the rats and cockroaches perform within. If it were not for their beneficial assistance, it would be impossible to inhabit the South-side of this island during the time of severe droughts; when fodder becomes so scarce, that numbers of the working beasts, impoverished by hard labour in the course of the crop, perish under every hedge, and so fast, that it is impossible to bury their carcases. Some men likewise are so shamefully inattentive to the public health at such times, that they will often leave the carcases stinking above ground, and infecting the air, rather than be at the pains of causing any of them to be burnt or interred. The crows hold their jubilee on these occasions; and every day presents them with a new feast, which they never quit till they have reduced the carcase to a skeleton.

They are also very serviceable in the towns, where they are so tame, that they may be seen every day perching upon the houses, like pigeons, and alighting in the very streets. In Kingston, in particular, they may be remarked; and are undoubtedly attracted by the putrid sinew of fowl and fish-guts, or other offals, which are carelessly thrown into the streets and yards, or on dung-heaps.

In the country parts they eat dead lizards, snakes, rats, or any other putrid flesh, without seeming to prefer one species more than another. Sometimes they are known (when hunger presses, and their customary food is scarce) to snap up a young chicken, or duckling, just hatched.

They make no nest, but deposite their eggs (which rarely, if ever, exceed two) under some rock, or in a solitary part of the woods.

The cock birds frequently tread the hen poultry. When this happens, the gills of the hen turn gradually black, and look as if they were in a state of mortification. She declines, sickens, and is sure to die very soon after. Whence it seems probable, that the seminal fluid of these birds has something in it extremely acrimonious, and even poisonous to the female organs of a different *genus*. It may partake of the purulence and mephitic quality of their food, and bring on a mortification.

A person, intending to play a trick upon one of his acquaintance, caused a carrion-crow to be plucked, roasted, and served-up at table; but the flesh was so black, and the stench so intolerably offensive, that it was impossible to pass the deception upon any man who had not entirely lost his faculties of sight and smell.

There is something extremely remarkable in regard to these birds; but it has been observed so repeatedly, that it may be deemed a characteristic. They cannot bear to be looked at, especially after they are gorged with carrion: they hang down their heads to the very ground, and seem as if ashamed of their filthy office, or of their immoderate gluttony. Dogs, who have gorged themselves with the same dainty food, have often the same abashed, downcast look, when caught in the fact; and I do not question, but this emotion, the result of instinct, is designed to convey a moral lesson to man, and shew, in the picture exhibited by these animals, that such a voracious indulgence is equally odious and degrading.

The soft down under the wings, or taken from the young birds, who are perfectly white, is useful for stopping the blood in fresh wounds.

337. *Barbadoes and Savannah BLACK-BIRDS.*

These birds may be spoken of together, as they naturally associate; and, although of a different species, yet their food and manner of life being alike, they are inseparable allies. The former is called in North America the *maize thief*, or purple jackdaw. They have some resemblance to the daw of Europe, and are great devourers of corn and fruits; but they are very serviceable, at the same time, in devouring those worms which prey on the corn, before it is ripe; they are likewise extremely fond of the ticks, which infest cattle, horses, and sheep. These quadrupeds, as if sensible of their benefactors, very patiently suffer them to hop about their bodies, either when grazing, or lying down; the industrious birds (called for this reason *tick-eaters*) pick off all within their reach, and gulp them down with amazing vivacity. In February, and several of the succeeding months, they assemble in large flocks, towards evening, among the mangrove trees on the coast, to spend the night together. Immediately after their meeting, the whole shore is enlivened with the delightful harmony of their orchestra. Their note is somewhat like the creaking of an inn-keeper's sign in a high wind, or the handle of a grind-stone; at other times it more resembles the gentle squeak which may be formed by means of a comb and paper. They vary frequently both the key and the tone, making altogether a very whimsical kind of concert, or medley of queer sounds, which have more of *recitativo* than *air* in them; and, after all, may possibly be nothing more than a musical confabulation on the subject of their preceding adventures. A wild-pigeon sometimes mingles his pipe with these birds, by way of German flute, amongst a numerous band of violins.

In regard to their general character, I have no doubt, but the service they render to the young corn, by destroying the worm, and to cattle, by devouring the tick, compensates very fully for the little share of the ripe grain they are able to purloin. In some of the North American provinces these birds were proscribed by the legislature, and rewards granted for killing them; but since their number has been thinned almost to extirpation, the inhabitants have discovered, that the corn-worm, which they used to feed upon, has committed infinitely worse ravages.

338. SINGING BIRDS.

There are but few of these vocal performers natives of the island. The chief are the nightingales ; of these are two species. One is more properly the *mock-bird* of North America, and is not so frequent as the other. It is principally seen in all parts of the Healthshire Hills, and probably delights in this district, because it is almost uninhabited by men, or because it finds here greater plenty of its choicest food. Its plumage is of a light-brown colour, inclining to reddish, and a few dark feathers in the wings and tail. It is much larger, particularly about the head, than the other species, but equally bold. The other species is the lesser mock-bird of Edwards, t. 78, and is found in most parts of the island, especially the low lands. Their note is a composition of the thrush, black-bird, and European nightingale ; but it has the nearest resemblance to the thrush, and is infinitely sweet, strong, and various. Every morning and evening they warble their melody, and enliven the rural retirements, answering each other with their enchanting echoes, and to such a degree of exactness in the key and inflections, that, although perched at a considerable distance from tree to tree, it is very often difficult to distinguish between them, except from the more articulate tones of that whose station is nearest to the hearer. At certain times of the year they sing during great part of the night, especially when it is moonlight. It is not certain, whether they are kept so wakeful by the clearness of the light, or by any extraordinary attention and vigilance, necessary at such times, for the protection of their nursery from the piratical assaults of the owl and night-hawk. It is possible, that fear may operate upon them, much in the same manner as it has been observed to affect some cowardly persons, who whistle stoutly in a lonesome place, while their mind is agitated with the terror of thieves or hobgoblins.

When taken young, they may be kept in a cage ; but will not long survive their captivity, unless they are fed with the hoop-withe berry, and the small-bird pepper, mixed together.

These birds are seen throughout the summer in the North American colonies ; but, about autumn, retire to the Southward, and stay away the whole winter.

They

They doubtless take their rout towards Florida ; and in very sever-winters cross, like many other birds of the continent, to Cuba and Jamaica ; where they breed.

339. BLACK-BIRD.

This is commonly called here the *two-penny chick*. It builds on the branches of the plantane tree, and is not observed to lay more than two eggs. It is a very fearless, tame bird, and perches up its head and tail as it hops along the ground, like the English black-bird, whose wild note it seems to imitate very much in its song, as it resembles nearly in size and make. Its young are callow about the end of June.

340. FLY-CATCHER, or WHIP-TOM-KELLY.

This bird is common also to the continent, from whence it probably makes an annual emigration. It has only a few notes ; but they are loud and sweet.

341. BANANA BIRD.

This beautiful bird is a native, and builds its nest with the fibres of the *Renealmia*, or old-man's-beard, curiously interwoven, and suspended above from the twig of some tree, generally the larger ebony. It has a sweet delicate note, and is easily tamed.

The bird-fanciers of this island reject the native choiristers ; but are at great expence in importing the cardinal from South Carolina, and the gold-finches, canary-bird, and linnet, from England. The gold-finches of Jamaica resembles the English in size and plumage, but it is not esteemed a bird of song.

342. HUMMING BIRDS.

Here are four different species. The smallest is much admired for the gracility of its frame, lovely plumage, and the delicate structure of its nest, which is commonly built on a small twig of the orange tree. They fly with such velocity, whilst they are sucking the *nectareum* of a flower, or blossom, that their wings are intirely imperceptible, and their passage from one flower to another resembles more the quick dart-

ing of a large fly, than the skimming of a bird. They seem the contiguous link which joins the bird and insect species.

343. BLUE MACKAW.

JAMAICA PARROT.

SMALLER-GREEN PARROT.

RED-BREASTED PARROQUET.

GREEN PARROQUET.

These are all natives, and too generally known to need any description.

344. GABLING CROW.

This is a native. It is perfectly black, and about the size of the English crow. It is remarkably shy, and rarely heard or seen, except in the lonely woods of the midland districts. When a flock of them assemble together, they are diverting enough to a traveler, with their strange, noisy gabble of guttural sounds, which imitate some human languages, and are thought to have much the confused vociferation of a parcel of Welsh folks exercising their lungs and tongues at a grand scolding match ; hence these birds have been nick-named the *Welshmen*. The structure of their organs of voice adapt them probably to articulate words in a manner more correct and exact than any of the parrot kind ; but they shun the society of mankind with so much caution, that it would be no easy matter to come at their young, and train them up for the experiment.

Q U A D R U P E D S.

345. HORSE.

The horses here are of various breeds ; Morocco, Spanish, British, and North American. They degenerate in bulk, but improve in beauty of shape. The natives are, for the most part, well-made, clean-limbed, hardy, of great speed and strength, and fit either for draught or saddle. Though their bones are slender, their sinews are exceedingly firm, so that they are capable of drawing very heavy coaches with a surprizing activity, and of undergoing very long journeys with great expedition, and indifferent fare. They are subject to fewer

distempers than the imported horses, and their hoofs are naturally so tough and compact, that shoes are seldom found necessary for them, even in rocky roads.

The wild breed, descended from the Spanish gennets, observed here in D'oyley's time, and very numerous in the woody parts of the lowlands, are diminutive and worthless. The wild cattle, on the contrary, are remarkably large and beautiful; a difference not easy to be accounted for, as the latter seem to require a richer pasturage for enlarging their bulk, than what they are able to meet with in those places where they are most abundant; perhaps it may be owing to the vicious propensity of the stallions, who begin to cover when they are not more than half-grown; and, by thus early consuming their vigour, become incapable of begetting any other than a puny offspring.

The general standard of the Creole horses is from thirteen and an half to fourteen hands. In order to mend the breed, some persons have thought, that a very high tax should be imposed, by act of assembly, upon all stone-horses, three years old, under fourteen hands. Perhaps a tax of 10 or 15*l.* per head *per annum*, and a penalty of the like amount, payable by the owner, besides forfeiture of the horse, upon conviction of any such, omitted to be regularly given in at the vestries, might answer the purpose so well as to put a stop, in a few years, to this diminutive breed; encouragement being given, at the same time, to import large stallions and mares from Europe and North America. By an act passed in 1759, all stone-horses, under fourteen hands, three years old, and running on the commons, are ordered to be castrated; but this act extends not to horses breaking out of any stable or inclosed pasture. A premium of 10*l.* is granted upon every stone-horse, or mare, fifteen hands high, and not exceeding five years old, imported from *England*. Horses imported from Ireland, or North-America, are not included. This act, with some amendments, could not fail of producing a very good effect.

346. Ass.

The finest asses for breeding mules are brought hither from Spain and Portugal. They degenerate in the low lands; but the native breed,

if carried very young to the rich Guiney graz pastures of the mountains, attain to a large growth, and produce almost equally good mules.

347. CAMEL.

These animals were originally bred here, with a view of carrying sugar and rum to the market, instead of mules. Great expectations were formed from this project, as the camel was known to be far more docile and tractable, and equal to bear much heavier burthens; but, upon trial, it appeared, that the roads were much too rocky for their hoof; that the hills were too steep, and that nature had designed them only for extensive and level sandy deserts. They answer no other purpose here at present, than that of terrifying horses traveling the roads, and causing the overturn of carriages now and then. The humanity of their owners preserves them from extirpation, though at the hazard of many a man's neck. The young ones are said to be good meat, and often used as such by the inhabitants of those countries where they are more common; but the epicures of Jamaica have not yet thought proper to introduce this Asiatic dainty into their bill of fare.

They attain here to their full growth; and some advantage might doubtless be made, by annually shearing their hair, at the time when it has the longest staple, in December, or January; at present, they are the most useless animals belonging to this island.

348. DOG.

The English breeds, introduced here, degenerate in size, but seem to lose no part of their more peculiar character, whether it consists in courage or sagacity. The most useful of the race are those belonging to the hog-hunters; they seem to be a mongrel mixture between the mastiff and greyhound, swift and fierce; the brindled are esteemed the best. Those of the Spanish breed possess the like qualities, are much taller, and have more of the greyhound make. The Negroes dread them as much as the Indians formerly did, when the Spaniards made use of them for pursuit.

I have seen several of the Guiney-breed here. They are about the size of turn-spits, of a jet-black colour, and cloathed with a sleek shining skin, without a single hair; their appearance is extremely singular,

singular, loathsome, and disagreeable ; yet they are considered as a great dainty in Guiney, and are said to constitute a principal part of food among the inhabitants of *Benin*, and other provinces.

It is a remarkable circumstance, that madness in dogs is almost unknown in this island, and other parts of America.

349. RAT.

Four different species infest this island. The largest is commonly called the *Charles-price* rat, and obtained its name from having been first observed here about the time when the late Sir Charles Price, Baronet, returned hither from Europe. It is said to have been imported by a Danish ship belonging to *Sancta Croix*, which was driven into Kingston harbour by stress of weather. By whatever means they first got introduction, it is certain the breed multiplied so fast, as very soon to spread over the whole island, where they are now grown exceedingly numerous and troublesome ; dieting chiefly upon fowls, eggs, and young poultry. They are no other than the water-rat of Europe, but grow to a larger bulk in general ; for I have seen some that measured eighteen inches from the snout to the extremity of the tail. They are amphibious, and found in holes on the banks of rivers, and the sides of ponds. They burrow like rabbits, and generally make their nests under ground, though I have sometimes found them in tufts of long grass. As the stock-houses, where poultry are kept are mostly built in a slight manner, with wattles plastered, these animals perforate a long way just below the surface of the earth, and passing under the lowest wattles, to the inner part of the house, always take care to emerge behind a box, a hen-coop, or some other concealment, from whence they sally forth in the night-time, seeking what they may devour.

I found a nest once with nineteen young ones ; they breed as frequently as the rabbit, and hence some judgement may be formed of their prodigious increase. Some have supposed that they are carnivorous only, and not granivorous ; but it is certain that they eat corn of every sort, dried roots, and eanes. They take the same delight as the jackdaw in stealing and hiding substances, which they are utterly incapable of applying to any use ; so that in their haunts or reposi-

storied have sometimes been found tea-spoons, thimbles, leaden bullets, coat and sleeve buttons, beads, and the like. This passion for hoarding is very unaccountable, as they seem to possess too much natural cunning not to know the difference between any such substances, and others that are proper for food. They are said to devour the black-house rat; in proof of which it has been remarked, that the latter are not near so numerous as they used to be before the arrival of these foreigners. Their most favourite aliment, however, seems to be fish; so that, whenever it is intended to destroy them by poison, there is no bait so effectual as sprats, or other small fry, well impregnated with arsenic, mixed, for better disguise, with a small quantity of dripping-fat, or butter, and laid near their haunts. Browne has classed this species with the beaver, calling it *Castor*; but there is very little analogy between them, either in structure, food, or manner of living. It is true, the tail of this rat is thicker and shorter than that of the other species, and without hair; its feet are webbed; its teeth are long, yellow, and like those of the squirrel. It is fond of fish, and amphibious; that is, it is furnished with means of seeking its prey in the water, as well as upon land; but does not, like the beaver, take up its constant abode near the water; in short, it might, with equal reason, have been classed with the alligator. The black house-rat was originally brought hither from England with the shipping. There are abundance of them wild in the woods, where they make their nests in thick shrubby trees. I have frequently seen them on the branches, and once found a nest, constructed somewhat like the English magpie's, coated with clay on the inside, lined with moss, and roofed at top with small twigs, dried grass, and other like materials, adapted to keep out the rain. These particulars seem to give the rat-kind some affinity to the squirrel; and their tail, in fact, constitutes the essential difference between them, considered in their state of nature. The two other species are probably indigenous to the island, and are both what are called field-rats, in contradistinction to those which are domestic. The larger is of a light-ash, or greyish colour, on the back, and other parts, except the belly, which is intirely white. This subsists almost wholly upon the sugar-cane, and therefore generally termed the *cane-rat*; from the nature of its food the flesh acquires a luscious and very delicate flavour, as I am informed by those who have eaten them,

when

when roasted; but they are not an article of food with the white inhabitants, though highly esteemed among the plantation Negroes, who spit half a dozen of them at a time, upon a long skewer, and broil them in this manner on their fires, leaving their heads on, but always cutting off the tail, close to the rump, which they think is not proper to be eaten. Their horrid appearance on the Negroe spits is sufficient to disgust most persons who have the smallest delicacy of stomach; but the Negroes are happily affected with so little prejudice or nicety in their food, that they will eat every other species of rats with equal indifference, and even cats, which, they alledge, are not at all inferior in taste and goodness to rabbits.

The fourth species is much smaller than the former, being in bulk no larger than an English mole. It is of a beautiful reddish colour, with a milk-white belly; the skin would answer the same purposes of dress, as those of the North American squirrel. This is likewise a field rat, and, like the other, takes up its habitation chiefly about the hollow roots of large trees, and the rocky acclivities of gullies, and river banks. It is far from being numerous, and it is probable, that it either does not bring forth so many young ones at a litter as the other species; or, being weaker, and less able to defend itself, more often falls a prey to snakes, owls, and its other enemies. All these different species agree, in committing most dreadful havock on neglected, foul cane-pieces. I have seen a visto, of about fourteen feet in breadth, cut by these animals through a large cane piece, almost in as a strait line, as if it had been purposely done with a reap-hook. They gnawed all the canes nearly through, at the bottom, and laid them flat; no fewer than a numerous army of them could have been employed in this mischievous work, which they effected in the space of one night. When the canes are thus bitten, and left on the ground, the wounded parts afford a *nidus* for some insect to deposit its eggs; the animaleules produced from them feeding afterwards upon the juices of the plant, the circumjacent parts acquire a fine crimson hue, but the cane withers, the remaining juice turns sour, and becomes totally unfit for making sugar, though it is often fermented and distilled into rum.

The Negroe rat-catchers are very expert at their busines: their trap very much resembles a small strawberry basket; an elastic piece of stick, like what is used in the English mole trap, is fixed into one end

of it, the other end of the stick, having a noose made of strong twine, is bent so as almost to touch the trap; the noose is conducted to the inside, and the twine hitched by means of a small peg so disposed, that, in approaching the bait, the rat is forced to displace it; the stick is then set at liberty to recoil, and the rat, being caught in the noose, is instantly squeezed to death. This trade is very profitable; for, over and above a stated reward of rum for a certain number of tails, the bodies are sold among the other Negroes: some of these rat-catchers are so skilful as to take a thousand *per week*, so that the Turkish bashas of ten tails make no figure, when compared with these sable bashas of ten hundred. Nor is this their sole advantage; the emoluments they earn are of such importance, as to recommend them strongly to the favourable opinion of the black ladies, who emulate each other in their carelessness, with a view to participate either of the capture, or the profits arising from it.

The terriers, particularly those of Scotland, would be found very useful here, in tracking and digging out the first-mentioned species, or water-rat; and, by destroying the females, their numbers might in time be lessened; though it is now impossible to extirpate them entirely by any method; even when they are well cleared by poisoning from one plantation, new colonies very soon arrive from the neighbouring woods and estates to supply their place, and generate a new stock of free-booters.

The first and second species, which are best distinguished by the name of domestic rats, are certain prognosticators of rainy or blowing weather, when they are more than ordinarily noisy and active about dwelling-houses. They hasten thither for shelter about twenty-four hours before the change happens, and leave them again after the weather grows fair.

C H A P. IX.

S E C T. I.

350. A CATALOGUE of such foreign Plants as might be introduced, and cultivated, in JAMAICA, with great propriety.

<i>RUBIA Peregrina.</i>	Lin. Sp. 2d edit. p. 158.	Turkey Madder.	This is supposed to be the same that is now cultivated in Smyrna for a crimson dye.
<i>Quercus Gallifera.</i>	Parkinson, 1386.	Gall-bearing Oak.	Galls from Aleppo and Smyrna.
<i>Carthamus Tinctorius.</i>	Lin. Sp. 1162.	Safflower.	This grows in Egypt, and is much used in dyeing. A species of it, brought into Jamaica by the Jews, for an ingredient in their soups, thrives well. <i>Br. p.</i>
<i>Pistacia Vera.</i>	p. 1454.	Pistachia Vera.	They are propagated at Aleppo, where the female, or fruit-bearing ones, are ingrafted on stocks raised from the nuts.
<i>Syrrax Officinale.</i>	p. 635.	Gum Styrax Tree.	This is supposed the same as the copal or copalm tree, which grows on the continent; but I take it to be the ococal, or gum <i>matricariae</i> , of New Spain.
<i>Papaver Somniferum.</i>	p. 726.	True Opium Poppy.	The seed might be obtained from Turkey.
<i>Caranna,</i> } <i>Tacamahaca.</i> }	Piso, 126. Pomet, 197.	Caranna, Tachamahac.	The trees producing these gums grow in New Spain.
<i>Sandaracha.</i>		Sandarach.	This comes from Asia.
<i>Balsam. Peruvianum.</i>	Dale, 337.	Bals. Peruv.	
<i>Balsam. Tolotatum.</i>	p. 549.	Bals. Tolu.	New Spain and Brasil.
<i>Capivi.</i>	p. 557.	Bals. Copiba.	
<i>Croton Sebiferum.</i>	p. 1425.	Tallow Tree.	Grows in China, and introduced into Jamaica by Mr. Ellis, where it is now growing.
<i>Laurus Cinnamomum.</i>	p. 528.	Cinnamon Tree.	In Guadaloupe, and Martinico.
<i>Laurus Camphora.</i>	p. 528.	Camphor Tree.	In Sumatra, and some English Green-houses.
<i>Cycas Circinalis.</i>	p. 1653.	Sago Palm.	In Java, and the warmest parts of the East Indies.
<i>Caffina.</i>	L. Gen. Pl. 333.	Cassine, Cassia-berry, or Paraguay Tea-plant.	This grows in Brasil, and is supposed the same as that of Carolina, and the adjacent Southern colonies.
<i>Arundo Bambu.</i>	L. Sp. p. 120.	Bamboo Cane.	This is already introduced into the island, as has been mentioned, but deserves a more general cultivation.
<i>Anacardus Orientalis.</i>	Kämpffer Amæn. p. 793.	Siam Varnish, or Tonrack.	This is thought to be a different species from the cashew tree of the West Indies. The fruit of it is the <i>Malacca bean</i> , or <i>Oriental anacardium</i> of the shops. The tree yields the varnish commonly used in the East Indies.

<i>Thea.</i>	p. 734.	Tea.	The seeds of the tea plant would probably grow well in any of the mountain settlements.
<i>Magnifera Indica.</i>	p. 290.	East India Mango.	Called in China <i>quacinao</i> , and in Java <i>po</i> . It is said, there is a tree now growing in the island of Madeira.
<i>Morus Papyrifera.</i>	p. 1399.	Paper Mulberry Tree.	Used for making paper in China, and Japan. It has been sometime in the English gardens.
<i>Quinquina.</i>	p. 244.	Jesuit's Bark, or Cafearilla de Loja.	This grows in great abundance at Loja or Loxa, and Cuenca in Peru; and could it be obtained, so as to be cultivated in this island, it would be of infinite advantage, either in respect to consumption, or for export.
<i>Jalapium.</i>	Dale, 183.	True Jalap.	This might be obtained from Mexico, or Peru.
<i>Mimosa Senegal.</i>	p. 1506.	Gum Senegal, or Sanhaga.	This grows in Egypt and Senegal.
<i>Mimosa Nilotica.</i>	p. 1506.	Gum Arabic.	In Egypt; and would, doubtless, grow well here, where we have a species of it in too great abundance.
<i>Fraxinus Ornus.</i>	p. 1510.	Calabrian Manna Ash.	This is worth trying in Jamaica, as it bears a very hot sun. It is common in the English nursery gardens.
<i>Amygdalus Communis.</i>	p. 677.	Sweet Almond.	It is thought this would grow to great perfection in our West India islands. There are two or three trees in Jamaica; but it might be propagated there more extensively.
<i>Capparis Spinosa.</i>	p. 720.	Caper Tree.	This shrub requires a rocky soil. It grows about Marseilles and Toulon.
<i>Lichen Rocella.</i>	p. 1622.	Argal, Canary Weed, or Orchelle.	This is a species of moss, which affords a valuable red dye. Mr. Osbeck says, it was sold at Leghorn at 11 d. sterling per pound. It grows in the Cape de Verd, and Canary Islands, particularly Teneriffe, from whence it might be easily procured for experiment.
<i>Anomum Cardamonum.</i>	p. 2.	Cardamoms.	East Indies.
<i>Circuma Longa.</i>	p. 3.	Turmerick.	East Indies.
<i>Pastinaca Opopanax.</i>	p. 376.	Gum Opopanax.	Sicily.
<i>Cucumis Colycintis.</i>	p. 1435.	Coloquintida, or Bitter-apple.	Africa.
<i>Pimpinella Anisum.</i>	p. 379.	Anise Seed.	Egypt.
<i>Ammoniacum.</i>	Dale, 119.	Gum Ammoniae.	Africa.
<i>Olibanum Thujmascalum.</i>	Dale, 348.	Frankincense.	Upper Egypt, and interior parts of Africa.
<i>Nux Moschata Orient.</i>	Dale, 302.	Nutmeg with Mace.	In Amboyna. A young tree is said to be now growing in Jamaica, but the spot of its growth is kept a secret by the proprietor. A species grows naturally in Tobago, which may be worth introduction.
<i>Caryophyllus Aromaticus.</i>	Lin. Sp. 735.	Clove.	Molucca Islands.
<i>Piper Nigrum.</i>	p. 40.	Black Pepper.	Sumatra,
			<i>Garcinia</i>

<i>Garcinia Monga Stona.</i>	p. 635.	Mango-steen.	A most delicious fruit, growing in Java, and several parts of the East Indies.
<i>Ipecacuanha.</i>	Dale, 170.	True Ipecacuan.	Brasil. Very deserving of propagation here.
<i>Lonicera Symporii-</i> <i>carpos.</i>	Clayt.	St. Peter's honey-fuckle.	Carolina and Virginia. Its root pounded, and taken in a moderate dose, is an infallible remedy against intermittent fevers.
<i>Myrica Cerifera.</i>	Catesb. I. t. 13.	Candle-berry Myrtle.	The berries are used in many parts of North America, to extract a wax for candles, by infusion in boiling water.
<i>Panax quinquefolium.</i>		Ginseng root.	This is common to Virginia, Pennsylvania, Louisiana, and Canada.
<i>Sassafras Laurus.</i>	Piso, p. 146.	Sassafras.	It grows in great plenty in East Florida, and about St. Augustine.
<i>Bread-fruit of the South Sea.</i>			East Indies, and George's Island.
<i>Luztian.</i>			This is a small species of <i>Phaseolus</i> , or kidney-bean, growing in China, and lately introduced by Mr. Samuel Bowen into Georgia, from whence the seeds might easily be obtained. He says, that where grafts are scarce, this furnishes an excellent fodder for cattle, as it may easily be made into hay; that it rises from 18 inches to 2 feet high, and produces four crops in the year; it is therefore very deserving of a trial in different parts of Jamaica, as there are some, no doubt, where it might be found to thrive extremely well.

351. PREMIUMS offered by the SOCIETY OF ARTS in London for the Advantage of the British American Colonies.

AMERICAN COTTON.

For the best specimen, not less than ten pounds, of cotton produced in the British dominions in America, equal to the fine Brasilian cotton; to be produced, with certificates of the place of growth, on or before the first Tuesday in January, 1774; the gold medal.

The same premium is extended to the year 1775.

ANOTTO.

For the greatest quantity, not less than two tons, equal to the best imported, produced in his Majesty's dominions in America, and imported into the port of London in the year 1773; 50*l.*

Certificates of the production, under the hands of some persons of known character residing near the place, and of the importation from the proper officers of the customs in the port of London, with speci-

mens of ten pounds weight, taken out of the whole parcel, to be produced to the society, on or before the first Tuesday in April, 1774.

The like premium for any quantity, not less than 500 lb. weight, equal to the best imported.

The same premium is extended to the year 1774, and certificates to be delivered on or before the first Tuesday in April, 1775.

For the best specimen of anotto, not less than six pounds weight, equal to the best Spanish anotto, to be produced to the society, with certificates of the place of growth, on or before the end of the year 1773; the *gold medal*.

The same premium, on the same conditions, is extended to the year 1774.

INDIGO.

For the best specimen of indigo made in his Majesty's dominions in America, equal to Guatimala indigo, not less than four pounds, to be produced to the society, with certificates of the place where it was made, and an account of the culture and process; the *gold medal*. This is extended to 1775.

ZEBRA WOOD.

For the greatest quantity, not less than six thousand superficial feet, of the variegated wood proper for fineering, called zebra wood [*a*], imported into the port of London; the *gold medal*.

The specimen to consist of not less than 200 superficial feet. This premium is extended to the year 1774.

MOSSES, PLANTS, BARKS, and BERRIES.

For a specimen, not less than 20 lb. weight, of the best sort of moss, of the growth of America, and there known to be of use in dyeing, but not yet introduced into Great Britain; 10*l.*

The same premium is offered, on the same conditions, for plants, barks, or berries severally, and extended to the year 1774.

BARILLA, or KELP.

For the greatest quantity of merchantable barilla, not less than ten hundred weight, made in any part of his Majesty's dominions in America, and imported into any port in England; 15*l.*

[*a*] The species here meant, is what comes from the *Afoguito Shore*.

For the next greatest quantity, not less than eight hundred weight,
10*l.*

Samples, to consist of not less than fifty pounds weight, with the proper certificates. This premium is extended to the year 1775.

CAMPHOR TREE.

To the person who shall cultivate, in any part of his Majesty's dominions in the West Indies, the greatest number, not less than 25, of the trees which produce camphor, in the East Indies; the *gold medal*, or 50*l.*

Certificates, under the hand of the governor, lieutenant governor, or chief magistrate of the island, specifying the number of plants, and that they are in a growing or thriving state, together with a branch of the tree, and some of the leaves, to be produced to the society, on or before the second Tuesday in November, 1776.

QUINQUINA, or PERUVIAN BARK.

To the person who shall introduce into any of his Majesty's dominions in the West Indies, the greatest number, not less than ten, of the *quinquina*, or that tree which yields the Peruvian or Jesuit's bark, on or before the first day of January, 1776; 50*l.* The certificates subject to the same conditions as in the preceding article.

352.

The preceding catalogue [b] is chiefly extracted from the pamphlet published by John Ellis, Esq; F.R.S., who has likewise given some useful directions for the transportation of plants and seeds from one country to another. As these may be considered supplemental to the catalogue, I shall transcribe such as appear most useful, and add such others as I find recommended by those who, by experience, have been taught to practise them with the happiest success.

In the first place, it ought to be carefully attended to, that the seeds should be perfectly ripe when they are gathered, and they should be gathered in dry weather; afterwards they should be spread thin upon paper or mats, in a dry airy room, but not in sunshine. The time necessary for drying them, will vary according to the climate, and season of the year; but the hotter the season, the less time will suffice.

[b] Viz. No. 350.

There are two methods which have succeeded in bringing over the seeds of the China tea plant to Great Britain, and may serve also for the seeds of other valuable plants. The first is, by covering them with bees wax, after due precaution. It principally consists in choosing only such seeds as are perfectly sound and ripe; those that are outwardly defective, or marked with the puncture of insects, must be laid aside. When a proper choice is made of them, they should be wiped extremely clean, to prevent any dirt or moisture being inclosed; each seed should then be rolled up carefully in a coat of soft bees wax, half an inch thick; the deep-yellow English bees wax is the best. When you have covered the number you intend to inclose, pour some of this bees wax, melted into a chip box of six or seven inches long, four broad, and three deep, till it is above half full; and just before it begins to harden, while it is yet fluid, put in the seeds you have rolled up, in rows, till the box is near full; then pour over them some more wax, while it is just fluid, taking care, when it is cold, to stop all the cracks or chinks (that may have proceeded from the shrinking of the wax) with some very soft wax; then put on the cover of the box, and keep it in a cool airy place.

In order to preserve seeds from growing rancid from their long confinement in the voyage in hot weather, they may be put up in separate papers, with fine sand among them, to absorb any moisture. These papers should be packed close in cylindrical glass, or earthen vessels, and the mouths covered with a bladder tied fast round the rims. The vessels are then to be put into other vessels, so large that the inner one may be covered on all sides for the space of two inches, with the following mixture of salts; half, common salt; the other half, to consist of two parts saltpetre, and one part sal-ammoniac, both reduced to a powder, and all thoroughly mixed together, to be placed about the inner vessel, rather moist than dry. Perhaps, if small tight boxes, or casks, or bottles of seeds were inclosed in casks full of salts, it might be of the same use, provided the salts do not get at the seeds; and as sal-ammoniac may not easily be met with, half common salt, and the other half saltpetre, or common salt alone, might answer the like end.

The smaller seeds being very apt to lose their vegetative power by long voyages through warm climates, it may be worth while to try the following experiment, upon such as are known for certain to be found:

found: dip some square pieces of cotton cloth in melted wax, and while it is soft, and almost cold, strew the surface of each piece over with each sort of small seed, then roll them up tight, and inclose each roll in some soft bees wax[*c*], wrapping up each of them in a piece of paper, with the name of the seed on it; these may be either surrounded with salts, as before, or packed without the salts in a box, as may be most convenient. Where glasses or boxes cannot be conveniently procured, the calibash and gourd shells, or joints of full-grown trumpet trees, thoroughly dried, seasoned, and rubbed on the outside with *palma Christi* oil, may answer equally well.

When plants are sent, the boxes in which they are set, should be 3 feet long, 15 inches broad, and from 18 inches to 2 feet deep, according to the size of the plants; but the smallest will be most likely to succeed, provided they are well rooted. There must be a narrow ledge nailed all round the inside of the box, within six inches of the bottom, to fasten laths or packthread, to form a kind of lattice-work, by which the plants may be the better secured in their places. If they are packed up but just before the ship sails, it will be so much the better. When they are dug up, care must be taken to preserve as much earth as can be about their roots, and if it should fall off, it must be supplied with more earth taken from the same hole, so as to form a ball about the roots of each plant, which must be surrounded with wet moss, (perhaps wet cotton may answer, where moss is not to be had) and carefully tied round with packthread, after a covering of plantane, or palmeto leaves, to keep the earth moist. There must be three inches of wet moss laid at the bottom of the box, and the young plants set in rows upright, close to each other, stuffing wet moss in the vacancies between them, and on the surface. I would advise the boring a great many holes at the bottom of the box, and placing it in a shallow wooden trough made water-tight at the joints with pitch, and one inch wider every way, with ledges of one or two inches, so placed as to keep the box from touching the bottom. This trough may be filled with wet cotton, which may be occasionally watered during the voyage, and no water be given in the mean time to the plants, which may be guarded from rain, and the spray of the sea, by a square awning of oil cloth, or painted canvas, nailed upon four upright slips of deal, rising from each angle of the box so high, as to overtop the plants two or three

[*c*] See  in the subjoined note.

inches; this will likewise shade them from the noon-day sun. The vapour, continually reeking from the cotton laid in the trough, will ascend through the holes at the bottom of the box into the other stratum of cotton laid under the roots, and preserve them in a due state of refreshing moisture. The boxes may be steadied by lashings to the deck.)

The plants sent from a hotter country to a colder, should be put on board ship in the spring of the year, that the heat of the summer may be advancing as they approach the colder climates; and on the contrary, those which are sent from a colder to a hotter country, should be embarked at the beginning of winter; but if they are originally from another hot climate, as for example the East Indies, and are intended for Jamaica, by the way of Great Britain, they will be put on board with greatest probability of success in January, February, June, July, or August [d], in order that they may be set in the ground, just before the vernal or autumnal rains. If they are going from a hotter country to a colder, they must have very little watering; if, on the contrary, they are going from a colder to a warmer, they may be allowed water more largely; and, being shaded from the sun, they will arrive safe.

A great many plants of the succulent kind will live out of the earth a long time. These need no other care than packing them up with moss in a close box, moss being likewise put between them to prevent their bruising one another, and holes bored in the boxes to keep them from heating and putrefying: in this manner, they will come safe from a voyage of even four or five months. Several trees may also be brought safely in the like manner, taking them up at a season when they have done growing, and packing them up with moss. Of this sort are, oranges, olives, capers, jasmines, and pomegranates; these, and many others, are annually brought thus from Italy to England; and, although they are three or four months on the passage, seldom miscarry.

In order to bring fruits in perfection from Jamaica, such as oranges, lemons, shaddocks, citrons, and limes, they should be gathered before they are turned entirely yellow, with about an inch or two of the stem or pedicle, the extremity of which should be immediately seared with a red-hot iron, and then dipped in a composition of melted rosin, pitch, and bees wax. The fruit may be well wrapped in brown paper,

[d] At the British port.

smear'd

smear'd with bees wax, softned with a little oil, and then pack'd in a shallow box, contriv'd with square partitions, each just large enough to receive one of the fruit, or with divisions formed by three or four rows of strong cord laced across tight; the cover should be fitted so as not to squeeze them. If necessary, the vacancies may be loosely fill'd with well-dried plantane trash, or dried corn-husks, and a good number of gimblet-holes bored all round the sides. When on board, it should be stow'd where no wet can get at it, and rais'd an inch above the floor, by two ledges fastened to the bottom: the length of the box is not material, but the width ought not to exceed 18 inches, or two feet at most, for the convenience of stowage on board, where the trouble arising from cumbersome packages, often occasions their being tumbled out of the way into improper places, to the injury of the products contained in them.

After pursuing these directions, it rests to entrust the conveyance and management on board, to a careful and intelligent captain, or other chief officer of the ship [a].

[e] Mr. Ellis, the ingenious gentleman before-mentioned, having lately favoured the public with some additional observations on the means of preserving seeds and plants in a vegetating state, when brought from distant parts, I shall here insert such of them as appear to be of the most use and importance.

Seeds of the true *rhubarb*, which were fold'd up in paper, and sent in letters by the packet to several of our colonies in North America, did not succeed well; whereas, those that were sent by the same conveyance, after having been inclos'd in flat tin boxes, or varnished iron snuff-boxes, and then put up in paper covers, grew very freely, as did those put up in chip boxes, and kept by the captains in their cheits or bureaus during the voyage. The reason of this defect of the seeds sent inclos'd in paper only, appears plainly to have arisen from their being press'd too close together by the many letters in the mail; and kept in a damp slate for, perhaps, two months or more, by which means they became putrid, and half rotten, by the time they arrived.

[f] Those seeds that were brought to England by Mr. Banks and Dr. Solander, preserved in wax, did not grow; for they were too thin and chaffy to keep any time, unless they had been preserved within their capsules, in small snuff-boxes, or, perhaps, in phials.

[g] Another observation occurs in regard to seeds preserved in wax, which is, that if they are not sown immediately upon being taken out of the wax, they will certainly perish; and this is one reason, why so many seeds of the *ka-tree*, that have been inclos'd in wax, have miscarried; for when they arrive, the persons who receive them, take them out of the wax to be distributed among their many friends; so that they seldom are sown till some time after, when the *germen*, which soon withers, has already lost all its vegetative powers.

Another defect arises from their being kept for some days expos'd to the air (after being taken out of the wax) before they are put into the ground.

This may afford a hint to gentlemen both in the East and West Indies, to order their seedsmen to put up the seeds in small packages, that the whole in each package may be sown at the same time; for the external air (which is very hot in those countries compared to a Northern climate), as soon as the seeds are expos'd to it, immediately dries up their natural moisture, and causes their lobe

leaves and *germen* soon to perish, and grow rancid. Such packets of seeds as are not opened, should be kept as they come over, in their bottles, canisters, or jars, in the coolest cellars, in tight casks, or close boxes; we may observe, that it has been the practice of all ages, in hot climates, to keep corn sound, by placing it in subterraneous caverns.

The Italians have a method of sending fruit through different parts of the country, by giving them a slight covering of wax, which preserves them fresh for a long time. If then, we follow the same method with mangoes, mangosteens, chocolate fruit, avocado pear, and many other fruits, packing them in boxes, or small casks, surrounded with clayed sugar, there is no doubt but the stones and seeds, at least, will come over in a sound state; some of the ripe mangoes and mangosteens in wax, may be covered with paper, and sent home in small boxes; for should the pulp be decayed, yet the kernels in the stones may be found, and in a growing state, as happens in apples, oranges, &c., the pulp of which is generally rotten before the seeds are sown.

The author mentions, that having received from Jamaica a variety of seeds of trees, many of which were unknown in England, each of which was tied up in a piece of coarse brown paper, and the whole packed up in some sheets of the same, upon examining of them, by cutting some of each open, he found that most of them were become dry and rancid, and very few of them vegetated. To prevent a disappointment of this kind for the future, he directed his correspondent, when the seeds of the largest sorts which he might collect should be ripe, and properly sweated and cleaned, to put them into tight tin canisters, or earthen vessels, such as pickling jars; to keep each kind of seed separate in a small bag of old white linen, or of writing paper, and surround all the sorts in the bags with rice, millet, panic, or any small farinaceous grain, or ground Indian corn properly dried, to fill up the interstices or vacancies between the seeds.

When the canister, or jar, is full, and the parcel closely pressed down, (but not so as to bruise the seeds) a small quantity of camphire should be inclosed in a piece of paper, or small pill-box, and put in at the top of each canister or jar, which must be well stuffed with paper before the cover is put on. The inclofed fumes of the camphire will destroy insects; and for the same purpose, in some canisters, instead of camphire, a small quantity of sulphur, or tobacco, may be put. The tops of the canisters and jars must be secured in such a manner as to prevent the external air from getting access to their contents.

Seeds have been brought from China inclosed in tortoise-shell, and in horn snuff-boxes, in most excellent order; and some inclosed in two-ounce phials, corked and sealed.

These canisters and jars should afterwards be put up in boxes, and packed in saw-dust, or clean sand (not sea sand) that has been well washed and dried, and kept in a cool part of the ship. These methods are recommended, as few people will be at the trouble of inclosing seeds properly in bees wax.

Mr. Ellis takes occasion to speak of the garden established in the island of St. Vincent, for the culture of the most useful plants, intended for the general benefit of the American islands, many of which may, in time, become profitable articles of commerce.

This garden, which appears to have owed its plan to the governor, general Melville, is under the care of Dr. George Young, principal surgeon to the hospital there, who has been indefatigable in collecting and propagating in it a variety of the most valuable plants.

Catalogue of plants now growing in the public garden at St. Vincent's.

Cinnamom,	* Sesamum,	Coriander,
* Logwood,	* Cassia fistula,	* Aniseed,
Safflower,	* China root,	* Vanilla,
Turmeric,	Gum galbanum,	* Dates,
East India mango,	Simarouba,	* Anotto,
Paper mulberry,	* Spigelia, or } Worm-grass, }	* Guaiacum,

N. B. The articles marked with a * are growing in Jamaica.

Scammony,

Scammony,	Balsam capivi,	Italian senna,
Colocynth,	* Citron,	* Aloes,
Rhubarb,	* Bergamot orange,	China tallow-tree,
Tobago nutmeg,	* Bamboo cane,	* Cochineal cactus.

The following plants, collected from the botanic gardens about London, he has lately received for trial in it :

Tea shrub,	<i>Adanfonia</i> , or four gourd tree,
Sago palm,	Gingko, from China, which bears nuts like pistachias,
Gum storax tree,	<i>Casharina</i> , a heavy red wood from Otaheite,
<i>Cipus Labdanifera</i> ,	Balustians,
* Succotrine aloes,	Pistachia,
Manna ash,	<i>Terebinthus</i> ,
* Almonds,	<i>Lentijus</i> , or mastic,
* Olives,	Florida starry-aniseed,
Cork trees,	<i>Zant</i> currant tree,
Camphire tree,	<i>Dracena Draco</i> , or gum-dragon tree.
<i>Gardenia</i> ,	
China Lechee,	

This gentleman brought with him a certificate from the chief magistrate of St. Vincent, that he had growing in this garden 140 healthy plants of the *true cinnamon*, at the beginning of May, 1772; in consideration of which, the Society of Arts, being sensible of the importance of propagating this valuable spice in our American islands, presented him with a good medal, in token of their esteem and approbation.

When he first planted the cinnamon seeds, several parcels of which he had received at different times, he found, though he managed them with great care, that none came up; but being driven by stress of weather into Guadaloupe, he obtained leave to go up into the country, where there are some cinnamon trees; and looking for some seeds that had fallen from these trees, he found many just shooting out their roots among the grafts and rotten leaves under them. Taking this hint, the next seeds he received, he sowed very shallow in the earth, under the shade of a tree, and from 200 seeds raised 140 plants.

I cannot but consider it as a matter of reproach to the gentlemen of Jamaica, that they should have suffered the little colony of St. Vincent to get the start of them, in the execution of so truly laudable and useful a plan; more especially as their climate, and the great extent of their island, which affords such a choice of excellent situations, and such plenty of fine soil and water, have given them advantages every way favourable to the success of an undertaking of this kind. Perhaps, there are few better sites than that destined formerly for the academy at Old-woman's-savannah in Clarendon. The purchase of the buildings and land, with some little addition of ground, would be a trifling expence to the public. A salary of 300*l.* sterling *per annum* might engage some gentleman skilful in botany, and zealous in promoting the plan, to reside there, and carry it on; for which purpose likewise, it would be necessary to buy twelve or fifteen Negroes, to be employed under him entirely in the garden; and the whole might be put under the supervision of the governor, the two representatives, and the rector of the parish. A supply of plants for stocking the garden might easily be obtained from the nurseries near London, upon application to the Society of Arts, with whom a correspondence would naturally be carried on; but, indeed, the chief dependance for its success must be rested on the patriotic encouragements of the Assembly, in the first place; and next, on their happy choice of a man of ability, science, and activity, for the well-conducting of it.

N. B. The articles marked with a * are growing in Jamaica.

S E C T. II.

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A P P E N D I X to VOL. III.

S E C T. I.

THE encomiums which are copiously bestowed upon the French *Code-Noir*, and the little knowledge the planters of our island have of the articles that compose it, induce me to believe, that a translation will be well received; not merely as matter of curiosity, but an exemplar, which several distinguished writers have pointed out to be worthy their imitation.

Should it appear to merit the high character they have given of it, there can be no dishonour in borrowing, and intermingling with our own system, such of its institutes as the difference of our constitutional principles has not excluded.

The French, it is said, cannot perfect their cloth-manufacture without some proportion of English wool. In resemblance therefore of their practice, why should we not, in our turn, make free with their political staple; and interweave so much of their jurisprudence, as may serve to render our own fabric more compleat and valuable? “*Fas est et ab hoste doceri.*” Let us not be deaf to instruction, even though it comes from our rival; for such is the import that I would wish to give to the word *hostis*.

The CODE-NOIR, or NEGROE-CODE; published, at Versailles,
March, 1685 [a].

LOUIS, by the Grace of GOD, &c.

ART. I. We will and intend, that the edict of the late king, of glorious memory, our ever-honoured lord and father, of the 23d of April, 1615, should be executed in our islands. To which end,

[a] Denisart mentions, that this edict is registered with the sovereign council at Hispaniola, but has never been registered in any of the French parliaments. The reason of this probably was, that, the provisions being merely local, it was thought sufficient that it should be registered in the colony only where they were to take effect.

we enjoin our officers, in every department, to banish thence all Jews whatsoever who have taken up their residence therein; which Jews (being avowed enemies to the name of Christ) we hereby command to retire from the same within the space of three months, to be computed from the day of publication of these presents, on pain of forfeiting their lives and goods [b].

II. All slaves that are in our islands shall be baptized, and instructed in the Catholic, Apostolic, and Romish religion. We enjoin the inhabitants, purchasers of slaves newly-imported, to give notice thereof to the governor and intendant of the said islands respectively, within eight days at the farthest, on pain of incurring an arbitrary fine. And such governor and intendant shall give the necessary orders for causing them to be baptized, and instructed, at convenient times.

III. We forbid the public exercise of any other than the Catholic, Apostolic, and Romish religion. We will, that all persons, who act contrary to this prohibition, shall be punished as rebels, and contemners of our authority. In this view, we forbid all heretical assemblies; declaring the same to be illegal and seditious conventicles, subject to the like punishment; which also shall be inflicted upon those masters who permit their slaves to attend such assemblies.

IV. No one shall be appointed an overseer of Negroes who does not profess the Catholic, Apostolic, and Romish religion. And, in case any other shall be so employed, the Negroes, belonging to the master so appointing, shall be forfeited; and the person, accepting such employment, shall be subject to arbitrary punishment.

V. We

[b] I would not recommend this article to the imitation of our Jamaica legislature: it is clearly founded in superstition and bad policy. The French, indeed, out-numbering us in people, can better afford supplies than we, from their European hive, to inhabit and strengthen their West-India colonies. But what must our losses of trade and inhabitants have been at Jamaica, had we copied from this precedent, and (as our council once foolishly petitioned the crown) proscribed these useful people from our island? In fact, this measure of the French government has been, comparatively speaking, almost as beneficial to us, as their persecution of the Hugonots, many years ago, proved to England. We gained a large accession of subjects, who brought not only their wealth with them, but their knowledge in trade; and, having incorporated themselves immoveably with our society, by the purchase and settlement of lands among us, their gains in commerce, or planting, are permanently attached to our island. "There are two duties" (says Mr. Voltaire) "which the Jews consider as the most indispensable of all others, namely, *the getting of money*

V. We forbid our subjects, of the Protestant, Reformed religion, to give any trouble or impediment to our other subjects, or their slaves, in the free exercise of the Catholic, Apostolic, and Romish religion, on pain of being punished in an exemplary manner.

VI. We enjoin all our subjects, of what quality or condition soever, to observe the Lord's-day, and the holidays that are kept by our subjects of the Catholic, Apostolic, and Romish religion. We forbid them to labour, or cause their slaves to labour, on those days, from the hour of mid-night to the following midnight, whether it be in the culture of land, or manufacture of sugar, or any other kind of work; on penalty that the masters so offending shall be subject to a fine, and arbitrary punishment, and the forfeiture of all such sugar, as well as of the slaves, detected at work by our officers [c].

VII. We forbid likewise any Negroe or other markets to be kept on the said days, upon the like penalties, and forfeiture of the merchandizes that shall be brought to any such markets; besides an arbitrary fine, to be levied upon the sellers, or dealers.

VIII. We declare all such of our subjects, who are not members of the Catholic, Apostolic, and Romish religion, to be incapable, for the future, of contracting lawful marriage.

We declare the children, born of any other pretended marriage, to be bastards; and we will that every such pretended marriage be held and reputed to be actual concubinage.

IX. Free men, who have one or more children born during concubinage with their slaves, as well as the masters of slaves who "money and chi'dren." But, admitting this to be true, it is so far from being matter of reproach, that it rather reflects very great honour upon them; for what subjects can better deserve the appellation of good citizens, than those who give their constant endeavour to introduce, into the state where they have fixed their residence, not money alone, but population also; which is the true political wealth of every commercial country? And as this people never dissipate unprofitably the riches thus acquired, so they do not consume their health and vigour in debauchery and excess. Have not these frugal and abstemious Israelites much greater merit, and do they not conduce far more benefit to the society of which they are members, than all those profligate beings (an enormous multitude they are!) who, instead of contributing in either way to the public good, do what they can towards the depopulation of their country, the impoverishment of their families, and the abridgement of their own contemptible lives?

[c] In the laws enacted by king Canute, there is one which frees a slave whose master had obliged him to work on a holiday, besides punishing the offence by a fine, or mulct, to the king. "But it may be questioned, whether this was the effect of humanity, or merely of superstition."

Lyttelton, Hen. II.

The like observation may be made on the subsequent article.

suffer such concubinage, shall be condemned each in a fine of two thousand pounds weight of sugar. And, if any master shall have children by his own slave, we will, that, over and above the like fine, he shall be deprived of such slave and children; and that both she and they shall be forfeited to the use and benefit of the hospital, with disability of their becoming enfranchised.^d We mean not, however, that the present article take effect, in case the father, not being a married man at the time of such his concubinage with his slave, shall afterwards intermarry with his said slave (according to the forms observed by the church); in consequence whereof, she shall become enfranchised, and the children free and legitimate [d].

X. The solemnities regarding marriage, prescribed by the ordinance of Blois (art 40, 41, 42), and by the declaration of the month of November, 1639, shall be observed, as well with respect to slaves as free persons; provided, however, that it shall not be necessary to obtain the consent of the father or mother, but only that of the master.

XI. We forbid clergymen to solemnize the marriage of slaves, unless they can produce the consent of their master. And we likewise forbid masters to use any constraint towards their slaves, to make them marry involuntarily.

XII. The children, produced from the marriage of one slave with another, shall be slaves, and belong to the master of the wife, and not of the husband, if the husband and wife have different masters.

XIII. We will, that, if a male slave shall intermarry with a free woman, the issue of such marriage, as well male as female, shall follow the condition of the mother, and be free like her [e], notwithstanding

[d] The policy of this law is very obvious. The co-habitation of a master with his slave brings them into a connexion inconsistent with their respective conditions: they become parents of the same offspring, which, by the laws of nature, must be deemed to owe them a reciprocal duty and obedience. If the children are left in a slavish condition, this degrades their natural claim of inheritance; for, in sight of parentage on the father's side, they ought to enjoy freedom; if they are raised from the indignity of a spurious birth by their father's subsequent intermarriage, they do not break-in upon the fences which the law has set up, in favour of the legitimately-begotten heirs, by receiving a patrimony, or estate, from their father for their maintenance. The institution of marriage is wisely promoted; and the chastity of female slaves, in some measure, guarded against that violence and constraint which may be supposed to follow the absolute power and authority of their masters.

[e] This is contrary to the antient feudal custom; according to which, if a free woman was married to a *wilkin by birth*, she lost her freedom during the life of her husband; and their children were

withstanding the slavery of the father; but, if the father be free, and the mother a slave, her children shall in like manner be slaves.

XIV. Masters shall be obliged to cause their baptized slaves to be interred, after their decease, in holy ground, in the cœmeteries allotted for that purpose. And, in regard to those slaves who may die before receiving the sacrament of baptism, they shall be buried, in the night-time, in some field near to the place of their decease.

XV. We forbid slaves to carry any offensive arms, or clubs, on pain of whipping and forfeiture of such arms to the use of the seizer; with exception only of such as are sent a hunting by their masters, or carry their tickets, or known tokens.

XVI. We likewise forbid slaves, belonging to different masters, to assemble together, by night or by day, under pretence of weddings, or any other account, whether it be at the plantation of their master, or any other; or more particularly in any highway, or in unfrequented places; on pain of corporal punishment, which at least shall be by whipping, and burning on the right shoulder with a red-hot iron, impressed with a fleur-de-lis. And, in case of frequent repetition of the same offences, or other aggravating circumstances, they may be punished with death, or according to the discretion of the judges. We enjoin all our subjects, whether officers or others, to pursue the offenders, and to apprehend and conduct them to prison, even although no warrant may have been issued against them.

XVII. The masters, who shall be convicted of having permitted or suffered assemblies composed of any other slaves than their own, shall be adjudged, at their own proper expence; to make good all damage that may arise or be done to their neighbours in consequence of such assemblies; and shall pay a fine of ten crowns for the first offence; which fine shall be doubled, upon every succeeding offence.

XVIII. We forbid slaves to sell sugar-canæ on any account or pretence whatsoever, and notwithstanding any permission from their

were born to the same state of servitude, which was continued to all the succeeding generations, unless their lord enfranchised them by his own act. The French ordinance in this case follows the old rule of the civil law, which we likewise adopt in our colonies, of, "*fatus per alium ventrem.*"

master,

master, on penalty that such slaves shall be whipped; and the master so permitting shall be fined in the amount of ten French livres; and the buyer of such canes in the same sum.

XIX. We likewise forbid them to expose at public sale, or to carry into any private houses for the purpose of sale, any kind of commodity, not even fruits, pulse, fire-wood, pot-herbs, or ballads, and cattle, without leave of their masters expressed by a ticket, or some known token, on penalty that their masters may claim the things so sold, without making any restitution of the price paid by the purchasers thereof, and receive also from such purchasers a fine of six French livres, to be appropriated to their own use.

XX. To this intent we will, that two persons be appointed, by our officers, for every market, who shall examine the commodities and merchandizes brought thither by slaves, as well as the tickets and tokens of their masters.

XXI. We permit all our subjects, living in the islands, to seize every article they find in possession of slaves not carrying tickets, or known tokens, from their masters; in order that such articles may be immediately restored to their masters, if their plantations be near the place of such seizure; otherwise, that they may be forthwith sent to the hospital, to be there kept in safety until due notice thereof shall have been given to their masters.

XXII. Masters shall be obliged to furnish, every week, to their slaves of ten years old, or upwards, for their subsistence [*f*], three pints (of the country measure) of cassava-meal, or three bunches of cassava-roots, weighing each two pounds and an half at the least; or some other vegetable food equivalent; together with two pounds of salted beef, or three pounds of fish, or of some other animal food in proportion; and to children, from the time of their weaning to the age of ten, half the aforesaid quantity of like provisions.

XXIII. We forbid masters to give their slaves any spirituous liquors, extracted from sugar-canæ, in lieu of the subsistence mentioned in the preceding article.

[*f*] This appears to be rather a scanty allowance. We find, that the Romans commonly gave their slaves, in general, at the rate of three pints of corn *per diem*; and, to the better sort, two quarts.

"The magistrate ought to take care, that the slave has his provisions and cloathing; and this ought to be regulated by law."

Montesquieu.

XXIV. We

XXIV. We forbid them likewise to exempt themselves from the support and subsistence of their slaves, by permitting them to work for themselves certain days in the week.

XXV. Masters shall be obliged to furnish each and every of their slaves, yearly, with two suits of linen cloth, or five yards of light cloths, whichsoever the said masters shall judge most proper.

XXVI. Slaves, that are not subsisted, cloathed, and maintained, in the manner we have directed by these presents, may give notice thereof to our attorney, and put their case into his hands; in consequence of which, or even without them, if the cause of complaint shall come to his knowledge by any other means, the masters shall be prosecuted at his instance, and without any expence; which process we would also have observed in regard to those masters who abuse [g] or treat their slaves in a barbarous and inhuman manner.

XXVII. Slaves, that are become infirm by old age, sickness, or otherwise, whether their disease be incurable or not, shall be subsisted and maintained by their masters; or, in case of being abandoned by their masters, they shall be sent to the hospital, to which such masters shall be adjudged to pay six-pence *per diem* for the subsistence and maintenance of every such slave [h].

XXVIII. We declare slaves to be incapable of possessing any thing, except to the use of their master; and whatever they may acquire, either by their own industry, or the liberality of others, or by any other means, or under what title foever, shall be and accrue to their

[g] So the evangelical precept, Ephes. vi. 9, "and, ye masters, do the same things unto them, *forsaking threatening*; knowing, that your master also is in heaven; neither is there respect of persons with him." And to the same effect was that constitution of Clement, "*cave, servos aut ancillae imperos acerbo animo.*" For which, Seneca gives us a very just reason: "*sicut enim formidolosus et contumax, nisi cum tactu blandienti permulceris.*" So the Jewish Law, in respect to the lesser modes of punishing: "*non opprimes eum, non dominaberis ei dure.*"

[h] Plutarch speaks of it as a most scandalous practice of the elder Cato, that he used to sell his slaves as soon as they grew old. So Montesquieu: "the laws ought to provide, that care be taken of them in sickness and old age." Claudius decreed, "that the slaves, who in sickness had been abandoned by their masters, should, in case they recovered, be free."

A regulation in this respect is much wanted in our island; where superannuated slaves, becoming burthensome, may, from the vile principles of avaricious owners, attract ill usage, instead of compassion. An exemption from taxes, for all slaves above fifty years of age, would be an useful public grant in their favour.

respective master in full property [i], in bar of all claim to the same by the children, parents, or relations, of such slaves, or any other persons, free or slaves, by any deed of gift or grant, or by inheritance or succession, or last will and testament: we declare all such dispositions null and void; as well as all promises, engagements, and obligations, made or entered into by such slaves; the same being deemed to have been made, entered into, and given, by persons incapable of contracting and disposing in their own name.

XXIX. We will, nevertheless, that masters shall be bound by the acts of their slaves, done in obedience to their order and command; as also for what business, or affairs, they may transact and negotiate in trade: and as for any private species of commerce, entrusted to them by their masters, they shall be answerable only so far as it turns to the profit of their masters. The emoluments of the said slaves, which their masters have permitted them to acquire, shall be held liable to secure their masters in payment of what is due on their property of the stock in trade; but, if the emoluments consist wholly, or in part, of goods which the slaves are permitted to hold and traffic with separately, their masters shall only come in for an equal dividend with other creditors [k].

XXX. Slaves shall not be capable of holding, or exercising, any office, or commission, that is attended with public functions; nor be appointed agents for any other than their masters, to manage and conduct any business, or arbitration; nor be witnesses in any civil or criminal matter; or, if admitted to give testimony, their deposition shall be considered as no more than a bare narrative, from

[i] This is agreeable to the civil law, mentioned by Justinian, “*ipsi seruos, qui in potestate aliorum est; nihil suum potest habere.*” Among some nations, however, it was customary to indulge their slaves with a right of acquiring property to themselves. And Pliny tells us, that he permitted his slaves to dispose of their effects by a kind of testamentary distribution. This property, which, in some places, and to a certain extent, they were allowed to hold, enjoy, or give away, independent of their masters, was called their *peculium*. But the villeinage-laws did not admit of this privilege.

[k] The design of this article seems to be, that the slaves shall not be part or sole owners of stock in trade; that their gains shall lay at their master's disposal; and, in case of insolvency, that the goods shall be liable to an equal distribution, in which the masters shall not, by being such, be entitled to any advantage, in preference to common creditors. I can't be certain of having given the exact sense of this article, as the French copy before me is imperfect.

which it shall not be lawful to draw any presumption, or conjecture, or the least circumstance corroborative of proof.

XXXI. Neither shall slaves be capable of becoming parties in any trial, or in any civil matter, whether as plaintiffs or defendants; nor be parties-civil in matters criminal; nor prosecute, in any matter criminal, for reparation of outrages and excesses that have been committed against slaves.

XXXII. Slaves may be prosecuted criminally, without its being necessary to make their master a party in the cause, except he be an accomplice. The said slaves, when accused, shall be brought to trial, in the first instance, before the ordinary judges; and, in case of appeal, to the sovereign council; the process shall be carried on with the same formalities as in the case of free persons.

XXXIII. The slave that strikes his master, or the wife of his master, his mistress, or any of their children, so as to cause an effusion of blood; or that gives them, or any of them, a blow upon the face; shall be punished with death.

XXXIV. And, in regard to outrages and acts of violence, committed by slaves against free persons; we will, that they shall be severely punished; and even with death, if necessary.

XXXV. Certain kinds of theft, as of horses, mares, mules, oxen, and cows, committed by slaves, or by others who have been made free, shall be punished effectually; and even with death, if the case require it.

XXXVI. Slaves, guilty of stealing sheep, goats, hogs, poultry, sugar-canies, cañada, peas, or other kinds of pulse, shall, according to the nature and quality of their crime, be punished by the judges; who may, if they think fit, order them to be whipped by the common hangman, and branded on the shoulder with a fleur-de-lis.

XXXVII. Masters shall be adjudged, in case of theft, or other damage committed by their slaves, to make good the loss at their own proper expence; unless they should rather chuse to give up the offending slave to the person who has sustained the injury; but on this point the choice must be made within three days, at farthest, from the time of passing the sentence; otherwise they shall be precluded.

XXXVIII. A fugitive slave, that shall continue out for a month, computing from the day of his being publickly advertised by his master, shall have both his ears cut off, and shall be branded on one of his shoulders with a fleur-de-lis. In case of his repetition of the same offence, computing in like manner from the day of his being publickly advertised, he shall be ham-strung, and be branded on the other shoulder. But, for the third offence, he shall be punished with death [?].

XXXIX. Freed men, convicted of harbouring or concealing fugitive slaves in their houses, shall be condemned in a body to pay to the master of such slaves a fine of three hundred pounds weight of sugar *per diem* for every day of their harbouring such slaves.

XL. A slave, who shall be punished capitally upon the accusation of his master (provided the master be not an accomplice in the crime for which such slave shall have been condemned), shall be valued, before his execution, by two principal inhabitants of the island, appointed to this office by the judge; and the price, set upon him, shall be paid to the master, for satisfaction of whom, a tax shall be laid, by the intendant, equal to the amount of the appraisement, proportionably rated *per head* on every Negroe paying taxes; and, to save expences, the same shall be levied by the farmer of our royal Western domain.

XLI. We forbid the judges, our attorneyes, and their registers, to take any fees in criminal prosecutions carried on against slaves, on pain of being punished for extortion.

XLII. Masters may, as often as they think their slaves deserving of punishment, cause them to be put in irons, or chastised with rods, or the whip; but they are not, in any case, to put them to the torture, nor punish them by mutilation of limb or member [m], on pain of forfeiting such slaves, and of being themselves proceeded against in an extraordinary manner.

XLIII. We

[?] Compare this with our Jamaica law against run-aways, and applaud the superior humanity of the French, in this instance at least.

[m] Bracton says, that, in the days of villeinage, the lives and limbs of slaves were under the protection of the king; so that, if a lord killed his slave, he would not be less punished, than if he killed any other person; but it was usually by fine. The penalty here inflicted, of forfeiting the slave, is perfectly agreeable to justice. So, by a law of the Greeks, a slave, too roughly treated by his master, might inflict on being sold to another. In the latter times, there was a law of the

XLIII. We enjoin our officers to commence criminal actions against those masters, or overseers, who shall kill any slave under their authority, or direction; and to punish such masters according to the atrocity of the circumstances; and, in case there be room for acquittal, we permit our said officers to discharge, as well the masters as overseers, without their being obliged to solicit us for a pardon.

XLIV. We declare slaves to be moveables, and as such to make part of the personal estate of their masters; and not mortgageable, but to be distributed equally among co-heirs, without regard to precaption [n], or the right of primogeniture; without being subject to the customary dower, or to the power of redemption by the feudal lord, or nearest of kin, or to feudal or signorial rights, to the formalities of decrees in chancery, or to the defalcations of the four-fifths, in case of disposition at death, or by last-will.

XLV. We mean not, however, to preclude our subjects from the power of appropriating them to their own persons, or to those of their kindred and family, in the same manner as is usually done with sums of money, or other moveables.

XLVI. The same forms shall be observed, in the seizure of slaves, which we have prescribed by our ordinances and customs for regulating the seizure of other moveables. We will, that the money thence arising be distributed in the same order in which the seizures are made; and, in case of insolvency, that the dividend be extended even so far as to a penny in the pound, after the privileged debts are first paid. In general, the condition of slaves shall be in

same nature at Rome. "A master, displeased with his slave, and a slave with his master, ought to be separated."

Lenity and humane treatment may prevent the dangers to be apprehended from the multitude of slaves in a moderate government. Men grow reconciled to every thing; and even to servitude, if not aggravated by the severity of the master. The Athenians treated their slaves with great lenity; and this secured them from the commotions raised by the slaves among the austere Lacedemonians. The primitive Romans lived, worked, and ate, with their slaves; they behaved towards them with great justice and humanity; the greatest punishment they made them suffer was, to make them pass before their neighbours with a forked piece of wood upon their backs; their manners were sufficient to secure the fidelity of their slaves; there was no necessity for laws.

Montesquieu.

[n] In the original, *préciput*; a term which means the portion of an estate, which, by custom, or the gift of the testator, descends to one of the co-heirs, over and above his equal share with the rest.

every thing regulated in the same manner as other moveables, with the following exceptions.

[o] XLVII. The husband and wife, and their young children, shall not be seized and sold separately, if they are under the power of the same master, we declare such seizures and sales to be void ; which restriction we mean should extend also to those who alienate a part of such divided families of slaves. The sellers in such case shall forfeit the residue of the parcel, which shall be adjudged to the purchasers of the other part aforesaid, without being compellable to the payment of any further or additional sum for the whole number.

XLVIII. Slaves, actually employed in sugar-works, indigo works, and plantations, from the age of fourteen to sixty, shall not be seized for debt ; unless it be for what may be due for their purchase-money ; and unless the sugar or indigo works, or plantations, wherein they are employed, are at the same time actually under extent or seizure. We forbid, on pain of nullity, to proceed with such seizure and judicial sale of any such sugar or indigo works, and plantations, without comprehending therein all slaves of the above age, and actually employed upon them.

XLIX. The lawful renters, or lessees, of sugar or indigo works, and plantations, actually attached, together with the slaves, shall be obliged to pay the full rent or value of their lease, without being allowed to deduct any thing for the children of the leased slaves, born during the course of the process.

L. We will, that, notwithstanding all conventions or agreements to the contrary, which we hereby declare null, the said children shall belong to the lessor of the premises, in case the creditors are otherwise satisfied; or to the party to whom the estate shall be adjudged in pursuance of a decree ; and to this effect mention shall be made, in the last publick notice given, before the issuing of such decree, of all such children born of slaves since the final seizure ; and in the same public notice a list or account shall likewise be

[o] The provisions, contained in the 47th, 48th, 51st, and 53d, articles, are founded upon the wisest policy ; and are well deserving our adoption in Jamaica, where the severance of Negroes from land has been always productive of infinite hardships to them, of stupendous loss to the island, and impediment to its further improvement and cultivation.

given

given of all slaves deceased since the seizure wherein they were comprehended.

L I. We will, that, for avoiding expence and unnecessary delays, the whole price of the lands and slaves, as fixed by the adjudication, together with what may be produced by sale of the leases, shall be distributed among the creditors, according to the order of their rights, and mortgages, without making any distinction between what arises from the sale of lands, and what accrues from the sale of the slaves.

L II. Provided, that the feudal and seigniorial dues shall only be paid in proportion to the proceeds of the land.

L III. It shall not be lawful for the next of kin, or the feudal lords to redeem the lands thus adjudged to another, unless they redeem the slaves also, which passed with the lands; nor for the person to whom the estate is adjudged to retain the slaves without the land.

L IV. We enjoin guardians, whether nobles or commons, usufructuaries, lessees, and all others in possession of lands, to which labouring slaves are annexed, to govern the said slaves as good fathers of families [q]; they shall be obliged, after their administration is finished, to account for the value of all such as have died, or whose numbers have been diminished by sickness, old age, or other means, not occasioned through their fault or neglect; and this too, without their being allowed to retain, for their own benefit, any children born of the said slaves during such administration; which we hereby order to be kept and surrendered up to those who are to become their masters and proprietors.

L V. Masters, having attained the age of twenty, may manumit their slaves by any deed during their life-time, or by last will and testament, without being obliged to assign any reason for such enfranchisement; nor shall they be under any necessity of consulting the opinion of their parents thereupon, even although they may be under the age of twenty-five.

L VI. Slaves that are made universal legataries by their masters, or are appointed tutors to their children, or named executors in their last

[q] So *Pliny* says, " *Servis, respublica quædam et civitas, domus est.*" And *Priscus*, speaking of the manner in which the Romans treated their slaves, " *Eos delinquentes quasi filios faciunt castigant.*"

wills, shall be held and reputed, and we do hold and repute them as enfranchised [r].

LVII. We declare their enfranchisement, granted in our islands, to be equivalent to their being born free in those islands; and slaves made free, have no need of our letters of naturalization, to qualify them for enjoying the advantages of our natural-born subjects of our realm, in the lands and countries subject to our obedience, even although they may have been born in a foreign country.

LVIII. We command all those who have been manumised to shew a particular respect to their former masters, their widows, and children; so that any injury which they may do to them, or any of them, shall be punished more severely than if they had done it to another [s]. We declare them, however, to be intirely freed and absolved from all other burthens, services, and claims, which their former masters may pretend to have, either on their persons, their goods, or inheritances, in quality of patrons.

LIX. We grant to freed-men the same rights, privileges, and immunities, which are enjoyed by persons born free. We will, that they merit the liberty they have received, and that the sense of this benefit produce in them, both in regard to their persons and property, the same effects that the blessing of natural liberty causes in our other subjects.

LX. We declare all the forfeitures and fines, that are not appropriated to any special use by these presents, to belong to us, and to be paid to the persons entrusted with the receipt of our revenues. We will, however, that one third of such forfeitures and fines shall be deducted for the benefit of the hospital established in the island, where the said penalties shall be adjudged.

[r] This mode of granting enfranchisement *by implication*, is agreeable to the villeinage customs. By which, if a man bound himself in a bond to his villein for a sum of money, granted him an annuity by deed, or gave him an estate in fee, for life, or years, the villein became enfranchised; for this was reputed "dealing with him on the footing of a freeman; or vesting an ownership, " trust, or power in him, entirely inconsistent with his former state of bondage."

But in case the lord indicted him for felony, it was otherwise; the lord could not inflict a capital punishment on his villein, without calling in the assistance of the law.

Blackst. Comm. vol. II. p. 94.

[s] According to *Braeton*, a slave enfranchised might be deprived of his liberty, and brought back to his former servitude, for ingratitude to his master.

S E C T. II.

EDICT OF THE KING,

Concerning Negroe Slaves in the Colonies; issued at Paris, in the Month of October, 1716 [*t*].

ARTICLE I.

THE edict of March, 1685, and the arrets issued either in execution or explanation of it, shall be put in force in our colonies, according to their tenor and purport; and consequently the Negroe slaves, that are employed there for the cultivation of the land, shall continue to be brought up, and instructed in the principles and practice of the Catholic, Apostolic, and Romish religion.

II. If

[*t*] Mr. Hargrave says, that, notwithstanding the former edicts, if Negroe slaves were carried from the French American islands into France, they were entitled to the benefit of the ancient French law, and became free on their arrival in that kingdom; to prevent which consequence this edict was made; which permits the bringing of Negroe slaves into France, under various restrictions, all tending to prevent their long continuance there after their arrival, to restrain their owners from treating them as property whilst they continue in the mother country, and to prevent the importation of fugitive Negroes; and that with a like view a royal declaration was made in December, 1738, containing an exposition of this edict, and some additional provisions. But that the ancient law of France in favour of slaves “from another country,” still has effect; and the same, “if they are brought under circumstances, to which the terms of these edicts do not extend.” The latter remark seems hardly worthy of this sensible writer, since no one needs be told, that a penal law or edict, or any other law, *does not include* persons or circumstances, that *are not included* in it. He tells us further, that Denfert observes, they are not registered by the parliament of Paris, “because they are considered as contrary to the common law of the kingdom.” But in reference to this, if they carry the operation of laws in that kingdom, which none, I believe, will deny, it matters not at all, whether the parliament of Paris have registered them not; at the same time it does not appear that the reason assigned for their not having registered them is any other than the author’s own conjecture.

Mr. Hargrave says, that the ancient law of France has effect, “in case the terms of these edicts ‘are not strictly complied with, or if the Negro is brought from a place to which they do not extend.’” So, in 1738, a Negro having been brought from the island of St. Domingo, without observing the terms of the edict of 1716; and in 1758, a slave being brought from the East Indies, to which the edict doth not extend, they were in both these cases declared to be free: in regard to the first case, Mr. Hargrave seems mistaken in saying, that the Negroe became free by the ancient law of France; it is plain he became free under the 5th Article of the edict, which declares, that, “in case of neglecting to observe the formalities in the articles required, the slaves ‘shall be free, and not reclaimable.’” The second case relates to a slave not belonging to any of the French American or Asiatic islands, and therefore not bound by the tenor of these edicts, which extend only to slaves belonging to those islands. It would seem, however, from this latter case, as well as from the edict itself of 1716, that the French law of the land still operates, where

II. If any of the inhabitants of our colonies, or the officers employed in their government, are desirous of bringing any black slaves of either sex into France with them, in the capacity of domestics, or otherwise,

where it can, to take off the yoke of slavery from all persons coming into that kingdom from foreign countries; following their ancient maxim of, “*serius peregrinus, simul atque terram Francorum ietigerit, eodem momento liber fiat;*” which maxim, however, if strictly taken, and agreeable to its original meaning, extended only to slaves belonging to foreign states, who might flee to, and take refuge in, their kingdom; but by no means extended to their own slaves, coming from any distant part of their own territories. It is plain, that the French government, weighing well the ill consequences which might ensue to their colonies from the loss and emigration of labourers from thence; and to the mother state, by their too frequent introduction into it, and intermixture with their white subjects, has taken a most effectual means, by the ordinances of this edict, to keep them employed on those spots, where alone their labours can redound to the advantage of the kingdom. For want of some controul of the like sort, enacted by the English parliament, our colonies at this time sustain a loss of many thousand labouring hands, who answer no other purpose, by their residence in the mother country, except those of adding to her list of vagabonds or beggars, and generating a numerous race of walnut-coloured beings, by way of foil to the complexion of her genuine breed.

I have already hinted my suspicions that the French code, or edict, of 1685, however its regulations may seem calculated for repressing the inordinate severity of masters, and mitigating the hardships of slavery in their colonies, is not obeyed, nor executed, with that energy, which their government, in a remarkable manner, compels in most other instances; this remissness is the more faulty, since, in other cases, to order and to be obeyed, is the same thing: the remark I made has been confirmed by the late publication of one who calls himself an officer in the French service. Speaking of the manner in which their slaves are treated at the island *Mauritius*, he gives the following horrid account: “ At day-break, three cracks of the whip are the signal that “ calls them to work; each man appears in the plantation with his mattock, where he works, all “ moist naked, in the heat of the sun. Their food is ground maize boiled in water, or bread “ made of the cassava root. Their cloathing is a scrap of linen. For the least neglect they are “ bound hand and foot on a ladder. Their overseer, armed with a postillion’s whip, stands “ over them, and gives them, on their naked posteriors, fifty, an hundred, or two hundred lashes. “ Every lash brings off a portion of the skin. The poor wretch, covered with blood, is then “ let loose. An iron chain is put round his neck, and he is dragged back to his work. Some “ of these miserable creatures are not able to sit down for a month after; and the women are “ punished in the same manner.”

“ There is a law made in their favour, called the *black code*. This law ordains that at each “ punishment they shall receive no more than thirty lashes; that they shall not be obliged to “ work on Sundays; that they shall have their provisions weekly; their cloaths yearly; *but* “ *this law is not observed.* Sometimes when they grow old, they are turned adrift to get their “ living as they can. One day I saw one of them, who was nothing but skin and bone, cutting “ some flesh from a dead horse to eat. It appeared to be one skeleton devouring another. When “ a fugitive slave is taken, he has one ear cut off, and is whipped. On a second desertion, he “ is whipped, has one hand strung, and a chain fastened about his neck. On a third, he is hanged; “ though this seldom happens, the masters being unwilling in general, on such a score, to lose “ their property. A slave almost white (*they are mostly brought from Madagascar, whose inhab-*
“ bitants differ in almost every respect from the natives of Africa), threw herself one day at my “ feet; her mistress made her rise early, and watch late. If she chanced to sleep, she rubbed “ her mouth with *ordure*; and if she did not lick her lips, she commanded her to be whipped.

“ She

wife, in order to confirm them still further in our religion, as well by the instructions they may receive, as by the example of our other subjects, and their learning at the same time some art, or trade, from which,

“ She begged of me to solicit her pardon, which I obtained. Sometimes, the masters of these wretches grant such requests, and within two days double their punishment, reckoning in tale of lashes, what they had professedly forgiven. I have daily beheld men and women whipped, for having broken a pot, or forgotten to shut a gate; their bloody limbs afterwards rubbed with vinegar and salt, to heal them. I have seen them, in the excess of their anguish, unable to cry any longer. I have seen them bite the cannon on which they were bound. I sicken at the recital of these horrors. My eyes ache with seeing them; my ears with hearing them!” &c.

“ It will be alledged, that the *black code* was instituted in their favour. Be it so; the severity of their masters still exceeds the allotted punishments; and their avarice withholds the provisions, the repose, and rewards, that are their due. If the unfortunate creatures would complain, to whom can they complain? Their judges are often their greatest tyrants.”

What heart is there, retaining the least degree of human feeling, but must revolt at this portrait of French barbarity! how ineffectual are all the boasted rules of this *code*, in a country, where the subjects universally act in disobedience to them; and what absolute dominion must tyranny and cruelty, the thirst of blood and revenge, have established, where even the bosoms of the softer sex are steeled to every tender tension, and can indulge in all the wantonness of indelicate, and savage barbarism! a slavery so constituted is disgraceful to any government that knowingly permits it; it were but justice to the rights of mankind, that such bestial inclemency should be swept from the face of the earth; if any thing could provoke the divine vengeance, this is apparently of a magnitude to call for its exertion. If the condition of slavery be, as some insist, in every case an evil, here it is the worst of all possible evils; no argument in favour of national trade can justify, no pretended delinquency of the slave, can excuse, or palliate it.

The character of the French is not that of a cruel and hard-hearted people, but the contrary; how then shall we reconcile this excruciating treatment of their slaves, in a manner so opposite to their character, and to the compassionate injunctions of their sovereign? I am apt to think, that such scenes, as this writer has described, are very rarely exhibited in their older and better established colonies; for this of Mauritius appears to be in its state of infancy, and the planters resident in it extremely different from those who are found in their American territories, in manners, moral, education, and character. According to this writer, the first settlers at Mauritius were some French planters from the Isle Bourbon; who carried with them great simplicity of manners, good faith, hospitality, and even an indifference about wealth. But when the island came to be considered as a medium for the Indian commerce, people of all characters resorted to it. The last war brought an inundation of bankrupts, ruined libertines, and cheats; who, driven by their crimes out of Europe, and out of Asia by the misfortunes of France, here attempted to repair their finances out of the public ruin. “ The people here, says he, are totally insensible to every thing that constitutes the happiness of an honest man. No taste for letters, or the fine arts. The sentiments of nature are utterly depraved. Even the relative affections are extinguished. This indifference extends to everything around them. Their houses are huts of wood that one might carry away upon a wheelbarrow. Their windows have neither glass nor curtains. There is no possibility of using carriages, for want of roads, &c.”

In a society of people fallen into so shocking a state of depravation, we are not to look for either the feelings or virtues which civilization produces. The Mauritians must be placed far below the standard of the American Indian tribes in the scale of mankind. They live in a state of absolute

which upon return of the said slaves, the colonies may derive advantage; the said proprietors shall be obliged to obtain permission for that purpose, from the governor general, or commandants in each island respectively, which permission shall contain the name of the proprietor, and the names of the slaves, together with their age, and description.

anarchy; in the practice of every thing that is brutal, vicious, shameful, and derogatory to human nature.

It requires all the vigour of the executive power of the French government to reclaim them, by discipline, and examples of severity, from their barbarous habits; but as this strictness is cautiously administered towards colonies which are but recently planted, and have scarcely taken root, so we may conclude that no such checks will be applied, until that island is more fully peopled; and, therefore, that these miserable slaves can have no prospect of being treated with humanity, until their masters are first humanized; which will only happen by bringing them under the compulsion of wise laws, impartially and rigidly enforced.

The worst effects must follow in these distant members of the empire, when the planters of best rank and fortune give bad examples to their inferiors. The writer, before quoted, mentions, that a counsellor (I suppose he means one of the royal council, who, *ex officio*, is next in dignity to the governor and intendant) of whom some of his slaves had made a complaint to the governor, assured him (the writer), "that although they were exempted from punishment that day, the next he "would have them fled from head to foot." The influence which a declaration of this stamp, coming from a person of so high authority in the colony, must carry with it over the minds and practice of the inferior planters, is obvious; as well as, that all the wholesome regulations of the royal code can avail but little, when they are set at nought by those whose stations require that they in particular should pay the most implicit obedience to them. In the British islands, at least the more populous of them, such examples would have no weight with the other ranks of men; for all here are upon a footing of more equality; nor could a privy counsellor either hope to screen his turpitude under the dignity of his station, or expect that his example would incline others to countenance it by their own practice; every one here being at liberty to judge for himself, and to judge of others, he must expect to have his conduct publicly arraigned, censured, and condemned, in proportion as it is found not to consist with the duties and honour of the place he holds. Upon this head, I cannot but esteem it a happy circumstance in our island, that it supports no less than four printing-presses, which are open to the communication of private as well as public wrongs; to the strictures passed on base and wicked actions, by whatsoever person committed, no less than to the approbation of such as are virtuous, and commendable. If these engines are necessary to the conservation of liberty, they may also tend very eminently to the mitigation of slavery; not merely by bringing to light the private abuses of it, but by the moral lessons they are capable of inculcating; the refinement they may produce on mens way of thinking and behaving; the caution and restraint which they may impose upon evil dispositions; the boldnes of their impeachments; the sting of their satire and ridicule; the force of their persuasion; the pleasure arising from their encomium; the efficacy of their castigation, and the dread of their popular appeals: the variety of their means, and the happy effects they are capable of producing, give them nearly the same degree of power which was formerly comprehended in the offices of tribune and censor among the Romans, and render them subsidiary to religion and the laws, in the reformation of manners, the dispersion of knowledge, and the polish of society.

That they may effect these, and many other beneficial consequences, is my sincere wish; and that they may be applied here successfully, not only to the correction of errors in our political, but in our domestic government likewise, should be the endeavour of every honest and intelligent planter of Jamaica.

III. The said proprietors shall likewise be obliged to cause such permission as before-mentioned, to be entered in the registry of the jurisdiction of the place where their residence is, before their departure; and also in that of the Admiralty, at the place of their landing, within eight days next after their arrival in France.

IV. If at any time masters of slaves intend sending any of them over to France, the persons charged with their conveyance thither shall observe what is ordained in regard to masters; and the names of such persons shall likewise be inserted in the permission aforesaid, of the governors general, or commandants, and in the declarations, and register, above prescribed.

V. Negroe slaves of either sex, brought into France, or sent thither, by their masters, may not pretend thereby to have obtained their freedom, by coming within our realm; but shall be obliged to return to our colonies, when their masters think proper. If however the masters of slaves neglect to observe the formalities required in the preceding articles, the said slaves shall be free, and shall not be reclaimable.

VI. We forbid all persons to carry off, or inveigle into France, Negroe slaves from under the authority of their masters, on pain of being liable to make good their value, in respect of age, strength, and industry, according to an estimate to be made thereof by the officers of our Admiralty, to whom we have assigned, and do hereby assign, the cognizance of these matters in the first instance. And in case of appeal to our courts of parliament, or superior councils, we will, besides, that the offenders be condemned for every delinquency, in a fine of two thousand livres; one third part whereof to enure to us, one third to the admiral, and the remaining third to the master of the said slaves, when the fine is awarded by the officers of the general court of *marble tables*; but, in case the said fine be adjudged by the officers of the especial courts of admiralty, then one moiety shall be to the admiral, and the other moiety to the master of the said slaves, and that without possibility of moderating such fines, under any pretence whatever.

VII. Negroes of either sex, brought or sent by their masters into France, shall not marry there without consent of their masters; and

if these consent to their being married, such slaves shall thereby become free, and so continue.

VIII. We will, that, during the abode of the said slaves in France, all that they acquire by their industry, or profession, until they are sent back to the colonies, shall appertain to their masters, provided such masters maintain and support them.

IX. If any of the masters having brought or sent Negroe slaves into France shall happen to die, the said slaves shall continue under the authority of the heirs of the deceased master; which heirs shall send back the said slaves to our colonies, in order to be distributed with the other parcels of the estate, conformable to the edict of March 1685, unless their deceased master shall have enfranchised them by his last will, or otherwise; in which case such slaves shall be free.

X. If Negroe slaves shall happen to die in France, their peculium, or private acquisitions, if any they have, shall belong to their masters.

XI. Masters of slaves shall not sell or exchange them in France, but shall be obliged to send them back to our colonies, in order to be there sold, and employed according to the edict of March 1685.

XII. Negroe slaves, being subject to the power of their masters in France, cannot appear there on trials for any civil matters, otherwise than as under the authority of their masters.

XIII. We forbid the creditors of masters of Negroe slaves to cause such slaves to be seized in France, for payment of debt. We reserve, however, to the creditors aforesaid the power of causing them to be seized in manner and form as prescribed by the edict of March 1685.

XIV. In case any Negroe slaves shall elope from the colonies, and withdraw into France, without permission of their masters, they must not pretend to have acquired their freedom by so doing. On the contrary, we permit their masters to reclaim them, wheresoever they may be found, and to send them back to our colonies; for which purpose we enjoin the officers of the admiralty, commissaries of the marine, and all other our officers whom it may concern, to aid and assist the said masters in seizing such slaves.

XV. The inhabitants of our colonies, who, after coming to France, may be inclined to settle there, and to dispose of their plantations in the said colonies, shall be obliged, within twelve months, reckoning from the day of the sale of such plantations, and of their ceasing

to be colonists, to send back to our colonies all Negroe slaves, of either sex, which they may have brought or sent into the kingdom ; and, in case the said inhabitants or officers shall fail of sending them back within the term prescribed, the slaves shall be free.

S E C T. III.

Progress of the French settlement at *Cape Nicola Mole*.

If the principles and genius of the French government are at all conspicuous in the preceding example, which has been given of their civil and political ordinances respecting their Negroe slaves, and slave-owners ; they are still more so, in the other departments of their colony-system. These manifest a degree of forecast, prudence, and vigour, that are not so observable in any movement of our own torpid machine. There is a spirit in the French monarchy, which pervades every part of their empire ; it has select objects perpetually in view, which are steadily and consistently pursued ; in their system the state is at once the sentient and the executive principle. It is, in short, *all soul* ; motion corresponds with will ; action treads on the heels of contrivance ; and sovereign power, usefully handled and directed, hurries on, in full career, to attain its end. With us, the liberty to which every corporate society, and every individual member of those societies, lays claim, of independent thinking and acting, excludes almost a possibility of concurrent exertion, to any one finite and determinate point.

If the inhabitants of Hispaniola were abandoned to their own conduct and free agency, their island would probably be destitute of artificial defences. It is, besides, a natural effect of the continental situation of France, the vast number of her fortified and garrisoned towns, and large standing army, that she is always in condition to spare an ample supply of regular troops for protection of her distant provinces ; of the ablest engineers for constructing or improving their fortifications ; and of chosen industrious subjects, for extending their settlements. Her colonies are not only well fortified and garrisoned, but well peopled, and all under the vigilant measures of her government. If the income of the French planters is diminished by subsidies for these ends, so that they are unable to vie with *princes of the blood* in expensive living, when they visit the metropolis of their mother country, they have still the satisfaction left them, of enjoying a competent remainder,

in full security, against foreign or domestic enemies. In such advantages we are glaringly defective ; yet we need not deplore the want of them, so long as we are provident for our internal safety, and our marine force continues, beyond comparison, superior to any other in Europe. It is however not uninstructive to remark the activity and solicitude with which France has persevered in strengthening her colonies, by those instruments wherein her ability and power have most consisted; and which are evidently employed to sustain them against that counterpoise of naval power, which she is sensible we possess. In some foregoing passages I incidentally touched upon her plan of fortifying *Cape Nicola mole*, as a restraint upon our navigation and trade. Some authentic materials, obligingly put into my hands by a friend, have enabled me to disclose her progress since the late war, in that important undertaking. It cannot be, without very well-grounded reasons, that the French government has been, and still continues, at an enormous expenditure, so earnestly bent upon the completion of this object. It is doubtless intended to second, in future time, some very capital machination against our commerce in this part of *America*. So deliberate a preparation for offending us in a future war ought not to be lightly regarded. It calls on us, in the most articulate terms, to stand on our guard ; that, whilst the French are strenuously occupied in erecting a second *Dunkirk* at Hispaniola, we may not too long neglect the same peaceful interval, to counteract their favourite scheme, by forming a receptacle for our own ships of war, at *Port Antonio*, in Jamaica, which is so happily circumstanced to serve as a curb upon their fortified port, and a protection for our homeward-bound vessels, in time of war.

When we see our competitors so bent on a scheme, which can have no possible nor adequate object, except that of giving us annoyance, it would be downright folly, if we should continue supine, and not catch the alarm. Whoever meditates seriously on the probable issue of their design, cannot believe that it forebodes any other than mischief to Great Britain. But, although this ominous measure was very early espoused after the commencement of peace, and so publicly dis-coursed of among merchants of the first eminence in Jamaica, as to leave no room for question but that their friends *at home* were seasonably apprized of it, yet we do not find, that any step has been taken

on

on our part to obviate its malignant consequences. The most politic and necessary counter-arrangement with us would be, the making Port Autonio one principal station for his Majesty's ships.

The French, it is true, have destined their port at the Mole for a naval rendezvous, but it is not their only one. It is however of great moment to them, as it opens immediately into the *Windward Passage*, and, in conjunction with Port Louis, guards the North-west and Western side of their island. They will nevertheless be obliged to divide their force, and keep part of their squadron at Cape François, to defend the Eastern coast. So, in reference to Jamaica, although it may be highly proper that Port Royal should remain the chief station for protecting the Southern coast of the island, yet it is most necessary that detachments should be constantly attendant upon the N. E. and N. W. ends, to cover those parts from attack, and give safer conduct to our navigation ; the N. E. in particular, because, like Cape Nicola, it commands the Windward Passage, which if we should be able to scour with a fleet of superior strength, all the expensive preparations made or making at the *Mole*, will be rendered unprofitable to the French, and harmless to ourselves ; for our navigation through the Passage, in time of war, might, in this event, be as safe as that of the British channel. We cannot indeed be certain, nor ought to indulge a confidence, that we shall always hold this superiority in a future war. But, sanguine as our expectations may be in this respect, it is wise to provide even against a despicable enemy, and keep even pace with him in taking precautions, as well for attack, as defence. Where-ever such a station is projected, there ought to be a competent establishment of fortifications, and troops, to secure the port from insult, and the magazines of stores and implements from depredation, whilst the ships are on service at sea. This is a material branch of the French plan. Their mole is to be made as impregnable, as forts, batteries, and cannon, can render it, in order that it may shelter their men of war and privateers, while refitting, or when they are too weak for hazarding an engagement. The conveniences preparing for them, joined to the natural advantages of the place, will enable them, after a battle, to repair their damages in a very short time, and proceed upon their cruize again, long before our fleet could possibly reach Port Royal, to
refit,

resist, and work against the trade wind and current, to regain their post in the Windward Passage.

In such a tedious interval, our trade cannot fail of being very much exposed. This should furnish an additional reason to shew the propriety of defining a considerable part of our squadron to Port Antonio; not to mention the speedy assistance, which a force so stationed, and collected at the Windward part of the island, might occasionally afford to the Leeward coasts and channels, whenever they might be in need of it.

I have thrown out these arguments, not with a view of anticipating the reader's judgement, but rather as fair and unaffected deductions from the following state of the French port, and the works there carried on, or (rather) by this time perhaps already perfected.

Previous to the commencement of the late war, this place was intirely unsettled; the lands surrounding it, for the space of four or five leagues, being rocky, barren, and incapable of producing any sustenance for man or beast. During the heat of the war, it was much frequented by our cruisers, but chiefly the privateers, as well for the sake of taking in wood and water, as for the conveniency it afforded them to annoy the enemy, and distress their homeward-bound merchant ships, in their passage from the Bay of Leoganne and the Southern coast of Hispaniola. Here too they generally careened their vessels in the basin, which is so shut up within the land, that they could not be discovered by any ships in the Offing.

The French, determining to preclude us from holding so advantageous a post in future wars, have entered at the same time into a more extensive speculation, and bethought themselves how to render it, not only an asylum to their own fleets, but a source of never-ceasing annoyance to us. They resolved to fortify the harbour in the strongest manner, and settle the adjacent country, as far as it might admit. With these intentions, the present peace was no sooner ratified, than they brought near five thousand *Acadians* to this place, and fixed a colony likewise of between two and three hundred German families, at about fifteen miles distance, in the back country, who were to cultivate provisions, for support of the new town at the *Mole*, from which a most excellent road of communication was also made to their settlements. In the first three years these *Acadians* were

subsidized

subsisted at the expence of the government ; during which time great numbers of them died, particularly the men, owing chiefly to the badness of their habitations, which they provided for themselves, and which were little better than huts, covered with thatch, by no means sufficient to defend them from the inclemency of the weather ; so that at present very few of the men are alive ; the women fared better. Most of the female inhabitants at the Mole are Acadians, and several others of them married, and removed to other settlements of the colony.

About five years ago, the French, following our example, declared this a *free port* ; in consequence of which, the towns-people have derived a subsistence, that the land adjacent could not afford. The houses, which at first were very mean, have been all, within these last three years, rebuilt, with materials from North America, framed and shingled. The town now consists of four hundred good houses, and contains the following public edifices ; a house for the commandant ; a very excellent one, of free-stone, for the second in command ; houses for the commissary, intendant, treasurer, collector, and other dependent officers ; a large repository for the king's stores ; a mast-house, of ample dimensions, and well filled with masts and spars ; an hospital, and a church.

On the South side of the town a small river discharges itself into the harbour ; this is taken up at some distance, and conducted to the highest quarter of the town, from whence it is distributed in small rills to every street, in order to furnish the inhabitants with good water for their domestic uses, and for refreshing their gardens, in which figs, grapes, plantane-trees, and a variety of pot-herbs, thrive remarkably well : this is intirely owing to artificial irrigation ; for without it, the foil, consisting only of the sea-sand with a very small intermixture of mould, would be incapable of producing these plants.

Remarks on the Harbour and Fortifications.

The harbour lies East and West, in depth about two miles and an half.

The Northern shore seems to be iron-bound for six to twelve feet from the water's edge, then extending in a level for about one

hundred and fifty feet, and beyond this it appears to rise gradually like a *glacis* till it attains an elevation of about thirty perpendicular feet; and here a flat begins, which continues the whole length of the harbour, and is covered with coarse grass and straggling bushes, such as are commonly produced near the sea-side.

The level on the Northern point, at the entrance of the harbour, seems much broader than what has been just mentioned, and extending from two to three hundred yards. Upon this are thirteen cannon, belonging to a battery that was formerly erected here.

The Southern shore appears likewise to be iron-bound, very steep and lofty, and covered with brush-wood; the point on this side has a flat of about 150 yards over.

The entrance is about one mile from the Northern to the Southern point; the channel is upwards of sixteen fathoms deep, but near in with the Northern shore there is ground from nine to seven fathom. Under the Northern battery the anchorage is in fifteen fathom; but ships in tacking to come to an anchor, are very much exposed to this and another battery erected at the bottom of the harbour.

The king has *four hundred and fifty* Negroes employed under the direction of an able engineer, in carrying on the fortifications, and other public works. The two batteries above-mentioned are constructed at each end of the town. The Southern mounts twenty-one guns; thirteen in one line, and four in each of the flanks. The Northern has embrasures for thirty-nine pieces of cannon; within this battery are built forty-seven houses, disposed in regular streets, each house about twenty by twenty-four feet diameter, framed and shingled; forty of these are allotted for soldiers, and the remainder for their officers. There are likewise two guard-houses, one at the Parade near the Southern battery and commandant's house; the other at the Point where the boats land, and adjacent to the custom-house, treasury, and king's house.

At some distance from the Northern fortress, stands the powder-magazine.

About six hundred yards from this fortress, to the N. North-east of the town, a sandy point stretches out into the harbour, shutting in a very fine basin of about three quarters of a mile in breadth, in which is excellent anchorage, and where ships of any burthen

may ride with perfect security even in a hurricane. Close in with this sandy point there is a depth of water, sufficient for the largest vessels to careen; and here the necessary buildings and works are to be erected for heaving down, and careening the king's ships; it is fortified with four pieces of cannon, so disposed as to rake any vessel that might attack the Northern battery; and, in order to render the access more difficult to an enemy's fleet, a citadel is projected to be built on the North point at the entrance of the harbour, which is to mount one hundred guns, and co-operate with a strong battery intended on the opposite point on the South side.

Trade and Commerce.

In order to facilitate their communication with the settlements inland, to accommodate the merchants, traders, and planters, and expedite the king's service, a very good carriage road is formed from this town to Cape Fran^cois, and a regular post established. North-American lumber is at all times permitted to be imported, and molasses exported. At particular conjunctures the port is open for all North-American commodities, such as flour, fish, &c. At other times these articles are prohibited. This prohibition seems to arise from complaints which are lodged by the merchants trading from France, when they cannot find vent for their European commodities of a similar nature, depreciated by what are introduced from North-America, which are furnished at a much cheaper rate. Upon such applications made by the French merchants, the *general* frequently orders the port to be shut, with respect to such articles as particularly interfere with their home manufactures. But the inhabitants being always disposed to purchase the goods they want, at as low a price as they can, find ways and means of coming at whatever the North-Americans bring for their market. Upon entry at the custom-house no oath is imposed on the master when he reports his cargo; and, by the help of a generous fee, their vessels may obtain a permit to discharge their cargoes, at some or other of the different Barquadiers within the Bite of Leoganne; by which means they have opportunity of buying a load of sugars, which the planters are ever ready to furnish, as they obtain a better price from the Americans than from the French traders.

These vessels can at all times procure licence to take in a lading of molasses at any port in St. Domingo; this affords them another opportunity of vending any prohibited articles; and they are further assisted in this illicit commerce by the French sloops which ply in the offing, and receive their goods before they come into port; the American vessels then enter light, and may embark whatever commodities of the island they please, only taking care to lay molasses in their upper tier. Not only the planters, but the officers, find it advantageous to give them encouragement; and the latter connive at many little irregularities, which happen in the mode of conducting this trade; so that it is no wonder that the Americans are able, somehow or other, to buy or to dispose of whatever articles are most convenient for them.

Now and then, upon violent complaints of the French merchants, some seizures have been made of these interlopers, for having sugars on board; but, after detaining them for some time, they have generally been released, and suffered to proceed on their voyages.

It does not appear that the Dutch carry on any trade either at the Mole, or any other port of Hispaniola; and if they have any with the Spaniards, it is probably of very little consequence; so that the Americans now stand almost unrivalled, without excepting scarcely even the shipping of France; and may with truth be affirmed to have contributed nearly as much as the French themselves, towards the establishment of this new port, its town, and trade in particular; and in a general view, to the advancement of most of the other trading ports of Hispaniola, the encouragement of its staple productions, and its present very flourishing and formidable state.

Port Duties.

The duty on anchorage is from six to twelve dollars, according to the tonnage of every vessel.

On salt-fish, one pound *per cent.* on the sale.

Lumber, flour, and other articles, two pounds *per cent.*

Thus these duties can never be oppressive on the American importer, because they are levied *ad valorem*, and paid in effect by the French consumers. Their product is applied towards the carrying on the fortifications and other public works, and contingent expences

pences of the port; the deficiency, if any happens, is made up from the treasury of the island.

Foreign Shipping.

The number of vessels cleared in the year 1772, from the custom-house, amounted to between two and three hundred sail, consisting chiefly of brigs and snows, with some few ships, all from different ports of North America. Adding to these the other foreign vessels, the French coasters, and European traders; the whole amount is not much short of four hundred sail. Most of the vessels bound to Jamaica from North America call in here, and few of them but are complaisant enough to pay another visit on their return.

The vessels which load or unload here, for the greater part lie close to the town, with their stern anchors on the beach, which shews how conveniently this place is adapted, in every point, to invite trade, and expedite mercantile transactions.

When we reflect that less than ten years ago it had neither house nor inhabitant, it appears next to incredible, that in so short a time, this desert should be filled with people, the harbour crowded with shipping, and its whole aspect changed, from poverty and desolation, to a well-established, secure and opulent *emporium*, advancing still by hasty strides to a superiority and grandeur beyond the oldest and most boasted seats of trade in any of the British islands. We may envy, but I fear we never shall equal, this wonderful pattern of French policy, in founding; industry and ability in accomplishing; so truly noble a fabric: unconcerned spectators of it as we are at present, we must expect that the very next war in which we engage against France, will make us most thoroughly sensible of its vast importance.

S E C T. IV.

On the antient Indian Inhabitants of Jamaica.

The Decades of Peter Martir (which till lately I had not an opportunity of consulting) afford us very little information relative to the ancient state of this island; a few particulars however are to be found in his collection, which may throw some light on those matters in our Jamaica history, that have been doubtfully or erroneously treated of.

The

The name *Jamaica* [*u*], or *Jamica* [*w*] was given to it by the Indian inhabitants; yet some Spanish authors have thought that it was also the *Babeche*, or *Bobio* (land of cottages), to which Columbus was directed by the people of the *Lucayo* or Bahama islands; for when he enquired the place, whence they furnished themselves with gold and pearls, they told him there was abundance at *Bobio*, pointing to the Eastward, which course brought him to Hispaniola; but even this island was called by its natives *Quisqueya*, (the great country) and also *Ayti*, or *Hayti* (uncouth), by which latter appellation it was likewise known to the *Caribes* of the windward *Antilles*. It is probable, that the Lucayans only meant some particular district or province, as (for example) the territory of the cacique *Bobechio*, which lay between Cape Nicholas and Tiburon, on the North-west part of Hispaniola, and nearest to Cuba, consequently the part with which they were best acquainted.

Columbus was afterwards led into a similar mistake at Hispaniola, when, upon a like enquiry about their gold, the Indians there mentioned several different provinces, or petty kingdoms, where it was found in greatest plenty, and which the admiral mistook at first for the names of as many different islands; besides, Jamaica produced but very little gold in comparison with Hispaniola; and, by the Spaniards who first settled in it, was believed to contain neither that precious metal, nor pearls. The like opinion was formed of Cuba, when it was first discovered.

Jamaica was compared by Columbus to the island of Sicily, both in regard to its extent and fruitfulness; he supposed it about one hundred and fifty miles in length, and sixty in its utmost breadth, which comes near to exactness, and shews what a degree of accurate geometrical knowledge that able navigator possessed. At this time, the hills adjacent to the coast were covered with thick woods; and to this cause he attributed, that, in passing along the South-west end, very heavy rains came off shore [*x*] with great regularity every afternoon.

[*u*] Primum repetit Insulam, quam Incolae Jamaicam vocant, p. 7.

[*wv*] Devenit ad Insulam, quam Inquilini appellant Jamican. De Christoph. Columb. Navigat. Pet. Mart. p. 91. Cap. 98.

[*x*] In the month of July.

The plants and fruits of this country were found to be much the same as those of Hispaniola; with this difference, that the provisions were better flavoured and more abundant, and the cotton esteemed of a finer staple, than in the adjacent islands. It was commended for the agreeable temperature of its air, the fertility of its soil as well near the coast as inland, and the multitude of its convenient harbours. Martir calls it, “a rugged theatre for military operations;” and, no doubt, if the Indians had been of a disposition to maintain it against their invaders, they might have held out a long time, by withdrawing into the mountains. When Columbus circumnavigated the coast, they ran from all quarters with arms in their hands, and menacing looks, to dispute his landing; this induced him to think that they were more warlike than their neighbours, among whom he had met with a different reception; but, like the people of *Otabeite*, after one or two skirmishes, in which the Spanish fire-arms easily prevailed, they contracted friendship with the admiral, shewing a far stronger inclination to commerce than to war.. When therefore he was some time after forced by distress to take shelter here, he acknowledged it a great blessing, that Providence had conducted him to a place, where provisions were so abundant, and the natives so humanized, and desirous of trading with him.

They are represented by all authors, as a tractable, docile people; equal to any employment; modest in their manners; of a quick and ready genius in matters of traffic, in which they greatly excelled the neighbouring islanders; more devoted also to mechanic arts; more industrious; and surpassing them all in acuteness of understanding. They dwelt in cottages; and the island was so populous, that it appeared to Columbus to be full of villages. These consisted of several houses, and the buildings must have been extensive, since the custom was for a whole generation to live together in one house; we read of a village in Cuba, consisting only of fifty houses, that contained about two thousand persons, or twenty to each house. The principal articles of their food were the *guana*, and the *utia* (or Indian coney). They had no other edible quadrupeds, unless we reckon the younger alligators. Fish, salted and fresh; crabs; parrots; fowls, tame and wild; cassava, whose root they called

yucca;

yucca; maize, tomatoes, potatos, cocos, pulse of various species, and a pepper named *axi* (Indian pepper); to which may be added several other indigenous fruits; they had likewise a fermented liquor resembling ale, which was prepared from the maize; this does not appear to have been their common drink, but produced only on festive occasions, when it answered the purpose of intoxication full as well as our European strong liquors.

Cotton they cultivated in such vast plenty, as would incline us to think they exported a considerable quantity; for they consumed but little of it themselves in their cloathing; they went almost naked; their cotton manufacture consisted chiefly of *hamacs* or beds, muskeeto-nets for these beds; a sort of caps to cover their heads; and small aprons for decency. Their fishing-lines and nets were of bark. They resembled the people of Hayti or Hispaniola in customs, religion, historical songs; in their tools for agriculture and other work, their domestic utensils, and their weapons of war. The structure of their canoes was likewise the same. The larger sort of these vessels were called *piraguas*. They were made of cedar, or the great cotton tree, hollowed, and square at each end like punts. These *piraguas* were not flat-bottomed like the canoes, but much deeper. Their gunnels were raised with canes braced close, and smeared over with a bituminous substance, to render them water-tight; and they had sharp keels. The canoe was probably intended only as a fishing-skiff to ply in shoal water along the coast, or up the rivers; but the *piragua* for voyages at sea, and carrying on trade with their neighbours. Some of their habitations were furnished with chairs of highly polished ebony; and none were deficient in variety of utensils, both earthen and of wood, very curiously wrought.

From the resemblance which the language of these islanders bears, in some respects, to the Spanish, I am apt to suspect that many of their words have been altered by the Spanish mode of pronunciation, and the difficulty which the discoverers found in articulating and accenting them, without some intermixture of their own patronymic. In some this is exceedingly obvious, where the letter *b* is used indiscriminately for *v*, agreeably to their idiom. This perversion may easily lead us to ascribe a Spanish or Moorish origin

to the names of places, such as rivers, mountains, head-lands, &c., which in fact are of Indian derivation. Thus the article *gui*, to commonly met with both in these islands and on the Southern continent, was often prefixed or appended to the Indian names of places and things, and even of their provincial *caciques*. Of the latter were Gua-rionexius, Gua-canarillus, Gua-nabo, and others. Of the former a vast multitude occurs, as Gua-nama, Xa-gua, Gua-ha gua, Camayá-gua, Aicay-azá-gua, Má-gua, Nicará-gua, Verá-gua, Xaiá-gua, Gua-ríco, Ni-gua (Chigger), &c.; which may seem to confound them with derivatives from the Spanish or Moorish word *agua* (water). So the terminations, *ao*, *ana*, *coa*, and *boa*, or *voa*, as Manabax-ao, Cib-ao, Gu-ana, Magu-ana, Yagu-ana, Ligu-ana, Zava-ana, (Savannah), Furac-ana, (Hurricane), Caym-ana, Guaiac-ana, (Giacum), Haba-coa, Cauna-boa, and so forth. The names therefore occurring in our island of Liguanea, Cagua, Tilboa, Guanaboa, Guadibocoa, and others of similar finals, are with more propriety to be traced from the Indian than the Spanish dialect. There seems to be no question, but that these islands were peopled by emigrations from the continent so near to them; but it is no absurd conjecture, to suppose that they did not all proceed from one part or district of it. Cuba lays convenient to receive supplies from East Florida, and the gulph of Mexico; from Cuba to Hispaniola and Jamaica, the progress was equally easy; but as the Indians of this latter island were so strongly discriminated from the others in several qualities, such as their superior ingenuity, spirit for traffic, industry, and bold temper, it is probable that they drew some accessions from those provinces which border upon the gulph of Honduras, and more particularly that of Yucatan, lying in the same parallel of latitude. It is not unlikely, that traders from that great commercial province might resort hither at certain seasons of the year, to take off their superfluous cotton, an article in vast demand on the continent, and particularly in Mexico. Such voyages could, even in those days, with the greatest facility, be made to Jamaica, which lies so near to Honduras and Campeche, from whence the passage is marked out by nature, by a line of little isles and cayes, as the Santanillas, Serranas, Serranillas, and others, continuing the track almost the whole way. Their larger vessels were capable of

much more arduous expeditions; for at Cuba Columbus found canoes ninety-five spans in length, and able to hold fifty persons. At Hispaniola he saw some piraguas of twenty-five oars, as large as brigantines; and what is still more to our purpose, in passing through the Honduras Gulph, he fell in with one as long as a Spanish galley, eight feet in breadth, manned with twenty-five hands, laden with Western commodities, and bound, as he imagined from the province of Yucatan; in the middle of it was an awning composed of mats, made of palmeto leaves, and underneath it were disposed several women and children, and their goods, in such security, that neither the rain nor spray of the sea could annoy them. The lading consisted of great abundance of cotton cloths dyed with several colours and curiously wrought; short shirts or jerkins of the same materials, but without sleeves or collars; and cloths or aprons for men and women in their undress. They had wooden swords edged with sharp stones grooved in, and fixed with thread and bitumen, copper hatchets for hewing wood, small bells and plates of the same metal, crucibles for melting it, and cacao nuts, which, on the continent, passed current as money.

That the Indians, therefore, on this coast were in no want of convenient means for transporting whole families, nor unskilled in trade and navigation, must be very apparent; add to this, that the clearness of the heavens, and brilliancy of the stars in this hemisphere at night, must have greatly assisted their navigation, and enabled them to shape their course with tolerable accuracy. It is said of the Indians of Yucatan, that, in order to know the hour of the night, they observed the evening star, the Pleiades, and the constellation of Orion. By day they had particular names assigned to different quarters of the heaven, and governed their reckonings of time by them. But their voyages at sea were probably made by night, to which they had several inducements: a cooler atmosphere, which lessened their toil of rowing; a calmer sea, and less wind to contend against; lastly, a distinct view of those stars or planets which served for their guides. They lay by, perhaps, in the day-time under shelter of some little caye, or isle, of which there are such multitudes in this sea.

The people of the continent, and of this district in particular, had neither the use of iron nor letters; yet gave such proofs of advanced skill

skill and ingenuity in arts and sciences, as justly raised the admiration of their European discoverers. The Spaniards looked with astonishment on a race of men, who, in this sequestered part of the world, by mere dint of natural genius, unaided by books or information, had attained such lengths towards perfection in contrivance, delicacy, elegance, and utility, as appeared in their various fabrics, apparel, and ornaments; edifices, and utensils; public works, and regulations; their methods of computing time, and of communicating or recording events: so apt and lively were their faculties, that, as soon as the Spaniards instructed them in the art of writing, they immediately wrote their prayers, and traditional odes or songs, which before that period they had been used to recite; and quickly copied every other European model introduced among them. We are, I think, upon the whole, to consider Mexico and Peru as the two grand seats of Indian arts, civilization, knowledge, government, and trade; that the islands were peopled with colonies emigrating from these mother states; that they were children of the empire, but paid no tribute, nor acknowledged any fealty or dependance; that they retained some traits, but those extremely imperfect, of the religion, manners, and customs, of the larger body, from whom they had separated, losing, by consequence of that separation, in process of time, much of the civility, and those arts, inventions, and refinements, which distinguished the Indians of the continent so greatly above these small and dispersed communities.

The Caribes, or inhabitants of the lesser Antilles, seem to be a tribe proceeding from the more Southern parts of the continent, and maritime ancestors.

We find them stigmatized by the other islanders with the name of canibals, yet they were not wholly destitute of mechanic skill; for when Columbus first landed at Guadaloupe, he discovered in one of their huts a large quantity of spun cotton, and a curious sort of loom for weaving it; this discovery proves also, that they practised agriculture, and cultivated cotton, as well as the natives of the larger Antilles. But they differed very widely from the latter in many other respects, for they were fierce, savage, and rapacious; led a roving piratical kind of life, like the corsairs of Barbary, and made frequent descents on the larger islands, even as far as Cuba, carrying off captives, but forming no settlements on their coast. These were the only foreign enemies

which the Indians of Cuba, and adjacent islands, appear to have encountered, until the Spaniards came among them.

We are not assured whether the Indians of Jamaica had more than one cacique; but as their form of government resembled that of the Haytians, it is likely that the island was quartered into provinces subject to the authority of their respective chiefs. These caciques, if we may believe what is related of the Indians in Hayti or Hispaniola, maintained their power chiefly by working on the superstition and credulity of the common people by means of their *cemis*, or oracular idol: this was a hollow wooden image, within which the priest could conceal himself, and deliver mandates or responses through a tube or pipe. They had also in their custody three consecrated stones; one of which was efficacious for promoting the success of their crops; the second, for the safe and easy delivery of pregnant women; and the third, for obtaining rain, or favourable weather: but these stones appear to have been regarded rather as a kind of amulets than divinities. The *bebiqués*, *buutios*, or physicians, acted likewise in the capacity of priests and conjurors, and made themselves extremely useful to the caciques; for by combining all these trades, they were better enabled to influence the people in conformity to the pleasure of the cacique, and the juncture of affairs. We cannot, however, depend implicitly on the accounts which the Spaniards have given of their religious ceremonies and opinions; for they are allowed by some writers to have believed in one God, the immortality of the soul, and a state of future bliss; whereas, others represent them addicted to gross idolatry, and their notions of a Deity, or the soul, extremely confused and absurd.

We may venture to believe, that each cacique, with his confederate band of jugglers, framed whatever model of religion he thought fit for his own respective province, only taking care not to abolish any favourite popular superstition. Their government, taking its colour from the simplicity and mild disposition of their subjects, seems to have been established more on policy and cunning than violence; gentleness characterised the spirit of public authority, no less than their private manners. Columbus relates, that when he first arrived at Hispaniola, the cacique of the neighbouring territory paid him a visit: it seems the isle of Tortuga was likewise subject to the dominion of this chief. On the following day, a piragua came in from Tortuga, with forty Indians on board,

board, who no doubt had heard of these wonderful strangers, and were attracted by a very natural curiosity to see them and their ships. The caciue, however, was highly displeased at their intrusion, and, standing up on the beach, threw some water and stones at them in token of his resentment; upon which they very submissively tacked about, and returned home again without a murmur. Their attachment to these chiefs was unbounded and inviolable. In their temper they had no spark of cruelty. Of the placability of their disposition they exhibited many shining examples. They frequently disdained to kill the Spaniards, when they had them in their power, although those propagators of Christianity, impelled by a mixture of bigot rage and avarice, committed the most bloody and tyrannical excesses; which seemed to call for, and to justify, the most vindictive retaliations. During the war they prosecuted in Cuba, the Indians slew as many of these enemies as they could, in fair open combat; but whenever they surprized a party by stratagem, and took them prisoners, they only seized their cloaths and weapons, but spared their lives. They were unquestionably the most generous of foes, and their natural disposition truly amiable, benevolent, and noble.

This character stands fully attested and confirmed by that of the modern Indians on the *Mosquito Shore*, who are represented by all the English, who have been the best acquainted with them, as a mild, honest, docile, faithful, modest, friendly, inoffensive, and naturally enlightened people; who require only that artificial culture and civilization, which religious institutes, and scholastic improvements, bestow, to make them rank among the most virtuous, and useful subjects of Britain. Upon such minds, the endeavours of the Missionaries, that have been employed by the *society de propaganda fide*, were successfully and laudably exerted. These people are most worthy of being taught the principles of the Christian faith, for they already almost practise its doctrines from their natural propensity to good, and abhorrence of evil. Let me here take occasion to express a wish, that the noble and patriotic spirit of that society may still persevere with unabated zeal; and should their comprehensive, generous plan, admit of still further extension, it might likewise embrace the free wild Negroes, established in our island, who would indisputably be more confidential and useful subjects, if they were reclaimed from their present barbarism, and raised

raised above the common herd of Blacks, by the necessary effects of baptism, and religious precepts. The experiment, at least, is worthy trial, and with great propriety may be commenced in the parish of St. George, where there is a fine glebe of six hundred acres of land assigned near Crawford Town. The zeal of the society, if not its munificence, might here be well employed in founding a mission, or, perhaps, adding an annual sum to the parochial stipend, as an encouragement, and to enable the missionary or rector to engage heartily in so pious and politic a work, which the legislature of the island would doubtless second with every co-operation in their power. In respect to the mission on the *Mosquito Shore*, much advantage might be reaped beyond what hitherto has been experienced, if, in addition to a good and intelligent mind, the gentleman appointed should likewise possess some skill in botany, and other branches of natural study. The foundation of proper schools is an indispensable step; chapels, or houses for public worship, are not less so. These particulars may at first demand an extraordinary charge; yet their operation bids so fair for attaining many desirable and important objects, that, I trust, they will engage a serious and favourable attention from *the society*.

In the year 1507, Alonzo de Ojeda, and James de Nicueffa, procured from Ferdinand a very extensive grant on the continent, and the vice-royalty of Jamaica. James Columbus, son of the admiral, represented in vain that the island had been discovered by his father, and such a grant was injurious to the claims of his family [y]. He could only obtain, after a long course of solicitation, the titles of admiral, and governor of the Indies [z]. In virtue of these nominal posts he repaired to Hispaniola, with a full determination to support his pretensions against the appointment made by the crown, and to obstruct his

[y] By the original condition or charter granted to Columbus, in 1492, he was constituted admiral of all discoverable islands and countries, for his own life, with remainder to his heirs for ever, and all pre-emnencies and prerogatives to such office appertaining, in the same manner as enjoyed by the grand admiral of Calile; also vice-roy, and governor-general; but the crown reserved to itself the right of appointing sub-governors. He was to enjoy the tenth of all mines, jewels, and other valuables, and merchandizes; the other nine shares to enure to the crown. And, upon his contributing one-eighth part of the expence of fitting out any ships to be employed in trading to such countries, he was to be entitlled to one-eighth part of the profits of such ships.

[z] But although the family was in disgrace at this time, through the envy, and false representations of several needy court-dependants; yet, in consideration of his father's merits, he was restored, in 1520, to the vice-royalty of Hispaniola, and the other islands discovered by his father, and to his rights as admiral, but under some restrictions.

two competitors as much as possible, that they might not reap all the benefits they expected. Fortunately for him, they had both turned their thoughts at this juncture to the making further discoveries and conquests upon the continent, so that he was left more at liberty to pursue his scheme without interruption.

He made choice of Juan de Esquivel, an experienced officer (who had served some years in Hispaniola), and dispatched him with seventy men to effect a settlement at Jamaica, of which he was to take the command as his lieutenant governor.

This officer, soon after his landing on the island, began to parcel out and distribute the country and inhabitants among his followers; which the Indians disliking, betook themselves to the mountains, and stood on their defence; but Esquivel, after several engagements, in which the dogs he had brought with him were almost as destructive as his musquetry, found means at length to cut off the chiefs, or leaders, of the malecontents; the rest submitted; and, after being divided according to his original plan, they were employed in planting cotton and provisions. A breed of Spanish cattle, hogs, and horses, was next introduced, which increased very fast. The cattle improved prodigiously in bulk; and the hogs, by feeding on the plums, and other fruits of the country, not only grew to an immoderate size, but acquired such excellence, that their flesh was esteemed the most delicious and wholesome of all animal foods. Several species of garden-stuff were observed to come up surprizingly quick; lettuce, cabbage, borage, radishes, and the like, were fit for gathering in sixteen days from the time of putting in the seed; and gourds, cucumbers, and melons, within the thirtieth day. Esquivel, perceiving the Indians more tractable than he had expected, soon won them over to subjection by the moderation of his government, and without any further effusion of blood. This commander has been highly extolled for his prudent and temperate behaviour. His subjects continued to labour hard in their cotton plantations, and other improvements, which he had planned for rendering this a permanent and lucrative colony; so that the exportation from it about the year 1511 grew to be considerable, and it furnished copious supplies of provision to the Spaniards of the two neighbouring islands, who were chiefly occupied in quelling and extirpating the natives. At this period he had probably, with the assistance of the Indians, laid the

foundation of Sevilla Nueva; which, from the following account, appears to have been situated very near to the inlet where Columbus ran his two shattered vessels on shore. We are told by Herrera, “that whilst the admiral was detained here, waiting for a ship from Hispaniola to carry him off, a party of his crew, headed by Francis de Porras, entered into mutiny. These revolters, after rambling several days about the country, committing violence on the peaceable natives, marched towards the ships with intention to attack him;” and being advanced within a *quarter of a league's distance* from them, halted at an Indian town called Mayima, where some years afterwards the Spanish colony named Seville was established.” It is most probable, therefore, from this relation, that the inlet to which the admiral gave the name of Santa Gloria, was not, as some writers have supposed, what is now called Port Maria (which is many leagues further Eastward), but the cove known by the name of Don Christopher's, which seems to correspond with the event, and is not much more than a quarter of a league distant from Seville, or St. Anne's Bay.

It is uncertain at what time the sugar cane was introduced into Jamaica. It is said to have been brought first into Hispaniola, by one Aguilon, of that island, who in the year 1506, having carried with him some plants of it from the Canaries [a], they were found to thrive luxuriantly in this newly-discovered soil, insomuch that every root produced from 20 to 30 canes [b]. The cultivation of it was, thereupon, very zealously encouraged by the Jeronomite friars, who held a large share of authority, and, perhaps, of property, there. These patriotic sons of the church offered loans of five hundred pieces of eight to every adventurer who should erect a sugar-mill; and the premium operated so well, that three Spaniards set up one of these engines in co-partnership, at Laguata, near the river Nizao; others followed their example, and in a short space of time the number of these works augmented to forty, either water or horse-mills; for horned cattle were not as yet employed in them.

[a] Pet. Marc. p. 49.

[b] Most of our writers date their first introduction from Brazil; but Herrera affirms, they were brought from Old Spain into the Canary Islands; it is, we must draw their origin rather from Africa than America; but the plant was certainly common to both of them, as well as to

This new labour of cane-planting, added to digging in mines, and a thousand other drudgeries, contributed to wear out the poor Indians, who were every where treated as abject slaves; besides, their bodies were not athletic, nor capable of enduring the fatigue of hard labour, and their spirits were quickly broke with rigorous usage. The Spanish occupiers of land, therefore, increasing as fast as these Indians decreased, recourse was had to the Portuguese factories on the coast of Africa for Negroe labourers; and thus sprung up the Guiney trade with this part of the West Indies. The climate of Hispaniola proved so benign and natural to the Blacks, as to have it commonly said, "that unless one of them happened to be hanged, none ever died there."

The manufacture of sugar, and traffic for Negroes, found their way doubtless into Jamaica likewise, as soon as the colony was opulent enough to enter upon the one, and pay for the other; for, by degrees, the Indian inhabitants, partly by escaping to the continent, partly by the harsh usage of their new lords, and by the natural effects of despondence under so grievous and oppressive a change in their condition, became almost extinguished in every one of these larger islands.

The foundation of St. Jago de la Vega by the vice-roy Jago, or Diego Columbus, has been fixed about the year 1520, or 1521, not long before his decease, which happened in Spain about the year 1525. It seems, I think, evident, from the foregoing deduction, that this was never considered a *proprietary government*, in the sense we understand of Georgia, Pennsylvania, and other provinces in North America. No territorial grant was made to Columbus of any of these discovered countries; the sovereign reserved to himself the dominion and signorial right of soil, with nine shares in ten of all its productions. At the period, consequently, when it became an English conquest, it was a member of the Spanish empire, in the same predicament as Cuba and Hispaniola, over which the heirs of Columbus held only the same titular offices of admiral, vice-roy, and governor in chief.

Peter Martir bestows many compliments on the climate of these islands; he dwells upon the subject with rapture; but as I fear that I have trespassed too far already on the reader's indulgence, I shall quote only one of his fine speeches, which may serve by way of conclusion.

“ What greater happiness can there be, than to pass one's life,
“ where we are not obliged to squeeze ourselves into little cabins,
“ frozen with cold, or suffocated with heat! We have no winter here,
“ to load our bodies with ponderous cloathing, or to scorch our skins
“ before a perpetual fire; these are the practices which shrivel us up,
“ bring upon us a premature old age, dim our eyesight, consume our
“ vigour, and draw after them a long train of diseases [c].”

[c] Page 59.

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598	8. r. in it.
599	13 (from the bottom) place a comma (after) <i>first</i> .
604	12 r. of the.
619	21 r. <i>operation</i> .
632	3d (from the bottom) r. had <i>furiously</i> .
640	1 (Note) r. <i>there was</i> .

Page. Line.

699	15 del. <i>that</i> .
737	19 r. <i>piraguas</i> .
780	3d (from the bottom) r. <i>mimosa</i> .
820	17 (after) <i>one</i> , add, of <i>these trees</i> .
913	3 place an asterisk (before) <i>China tallow-tree</i> .
961	25 for <i>Georgia</i> r. <i>Maryland</i> .

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A LIST OF COPPER-PLATES.

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